The Republic of Liberia

Ministry of Health

Master Plan for Neglected Tropical Diseases

2016 – 2020

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ACRONYMS

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 (Eflornithrine) 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
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

List of Contributors

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Medical Assistance Program International (MAP)

American Leprosy Mission (ALM)

Accelerated Integrated Management (AIM)

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Schistomiasis Control Initiative (SCI)

Center for Neglected Tropical Disease (CNTD)

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INTRODUCTION

The multiple burden of different NTDs in Liberia are impediments to socio-economic development of already impoverished rural communities identified to be at risk of these disabling diseases; there is no doubt that NTDs constitute a great challenge to sustainable development needed to achieve the MGDs. Recent data from mapping of NTDs in Liberia indicates that there is high prevalence and overlap of the following NTDs - Onchocerciasis, Lymphatic Filariasis, Schistosomiasis, Soil Transmitted Helminths, Buruli Ulcer and Leprosy. Liberia's transition program from war up to the current developmental phase has been adjudged to be quite successful. The current administration, upon completing an Interim-Poverty Reduction Strategy (PRS) in 2008 launched its first full Poverty Reduction Strategy, which was based on four pillars: 1) Consolidating Peace and Security; 2) Revitalizing the Economy; 3) Strengthening Governance and the Rule of Law; and 4) Rehabilitating Infrastructure and Delivering Basic Services. The Ministry of Health (MOH) developed a National Health Plan (2012 – 2021) in line with the Agenda for Transformation.

In 2007, the Ministry of Health, due to constraints at the time, established a program of Basic Package for Health Services (BPHS) that it could effectively and equitably provide. The BPHS was intended to increase overall coverage of some priority diseases, strengthen procurement and management of pharmaceutical and health commodities and enable monitoring of performance and evaluation. The Basic Package of Health Services prioritized those services that are most critically needed to improve the health status of the Liberian population, especially its most vulnerable groups, in the short to medium-term, including the following six service areas: 1) Maternal and New-born Health; 2) Child Health; 3) Reproductive and Adolescent Health; 4) Communicable Disease Control; 5) Mental Health; and 6) Emergency care.

In realization of the danger posed by the NTDs in the fight against poverty, the MOH included the control and eradication or elimination of Neglected Tropical Diseases of public health importance in Liberia (i.e. Onchocerciasis, lymphatic Filariasis, Soil transmitted Helminthes, Schistosomiasis, Buruli Ulcer, Rabies and leprosy) among the priority diseases to be addressed in the National Health Plan.

The Ministry of Health and its collaborating partners, through an inclusive and consultative process, adopted an integrated framework approach to address menace of NTDs using the PCT, morbidity management and other approaches based on World Health Organization (WHO) strategies.

The Ministry of Health collaborated with partners to develop inclusive NTDs master plan based on evidence gathered on the burden, prevalence and co-endemicity from nationwide epidemiological mapping of the different NTDs namely, Onchocerciasis, lymphatic Filariasis, schistosomiasis, soil transmitted Helminths, Buruli Ulcer and Leprosy in the country. This Master plan includes activities for ongoing surveillance for guinea worm and snake bites, and other NTDs not yet identified in Liberia while mapping will be conducted for Rabies. The goal of the NTDs program is to reduce the burden of targeted NTDs to level that is no longer a public health problem through an integrated control programme, contributing to the socio-economic development of Liberia in the context of universal health coverage. Liberia is committed to providing free health care at the point of service delivery. This commitment was made during the UN General Assembly in November 2009 by the President of Liberia.

The objectives of the plan are to: 1) Strengthen government ownership, advocacy, coordination and partnership; 2) Strengthen community ownership and sustainability; 3) Establish and sustain partnerships for the control, elimination and eradication of targeted NTDs at central, county , health districts, facility and community levels; 4) Enhance high level reviews of NTD programme performance and the use of lessons learnt to enhance advocacy, awareness and effective implementation; and 5) Strengthen advocacy, visibility and profile of NTD control, elimination and eradication interventions at all levels. This Master Plan defines clear priorities which are supported by a set of objectives and strategies that will enable the NTDs program to achieve its mission. Stakeholders will use targeted resources mobilization approaches and transparent and continuous performance improvement methodologies to ensure that the goals and objectives set in the plan are achieved within the target for the planned period 2016 – 2020. The NTDs master plan provides a road map for turning the aspirations of the Ministry of Health and other line ministries and partners into reality in the next 5 years. Throughout the planning process, from the consultative meetings with stakeholders, epidemiological mapping of the priority

NTDs and the plan development; stakeholders have developed an institutional consensus about what it means to be a leading country in the control and elimination of NTDs in Liberia, the Mano-River Region and sub Saharan Africa.

Figures 1 and 2 below illustrate the components of a National Master Plan as well as the multi-year program planning.

Figure 1: NTD Master Plan: Stages of NTD Programme multi-year planning

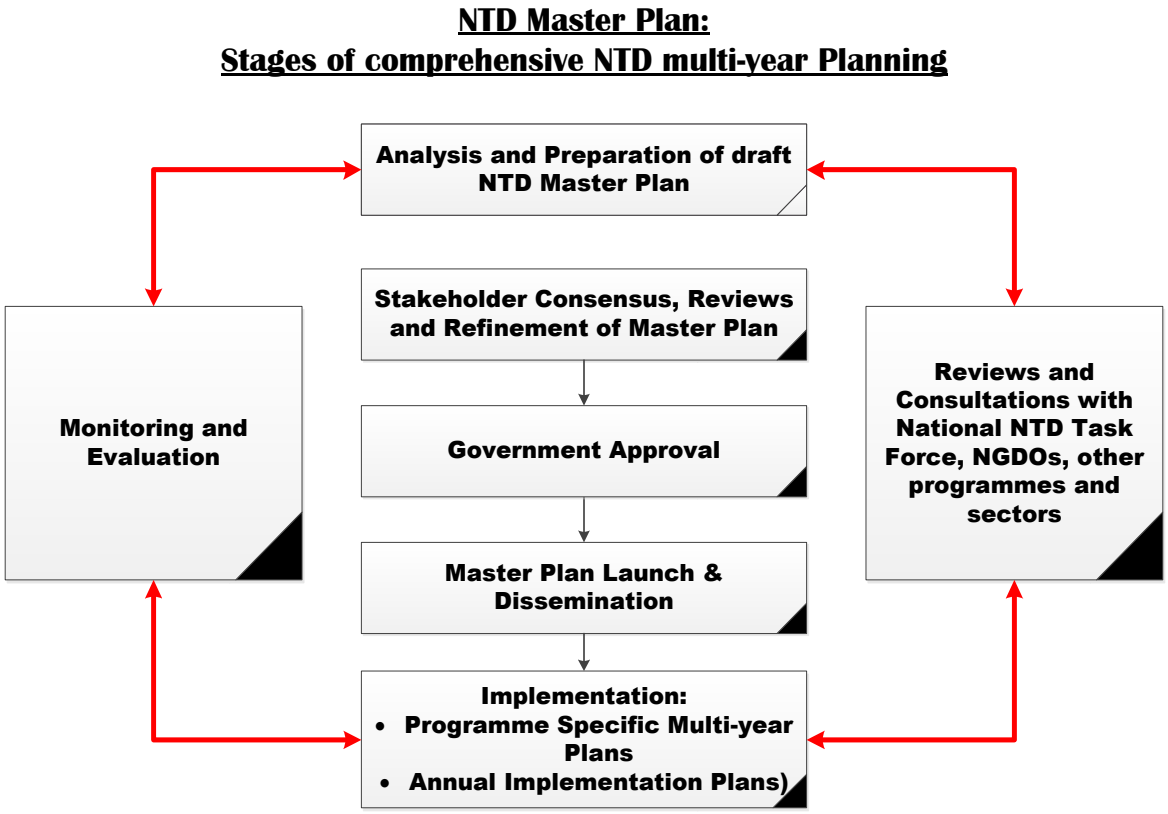
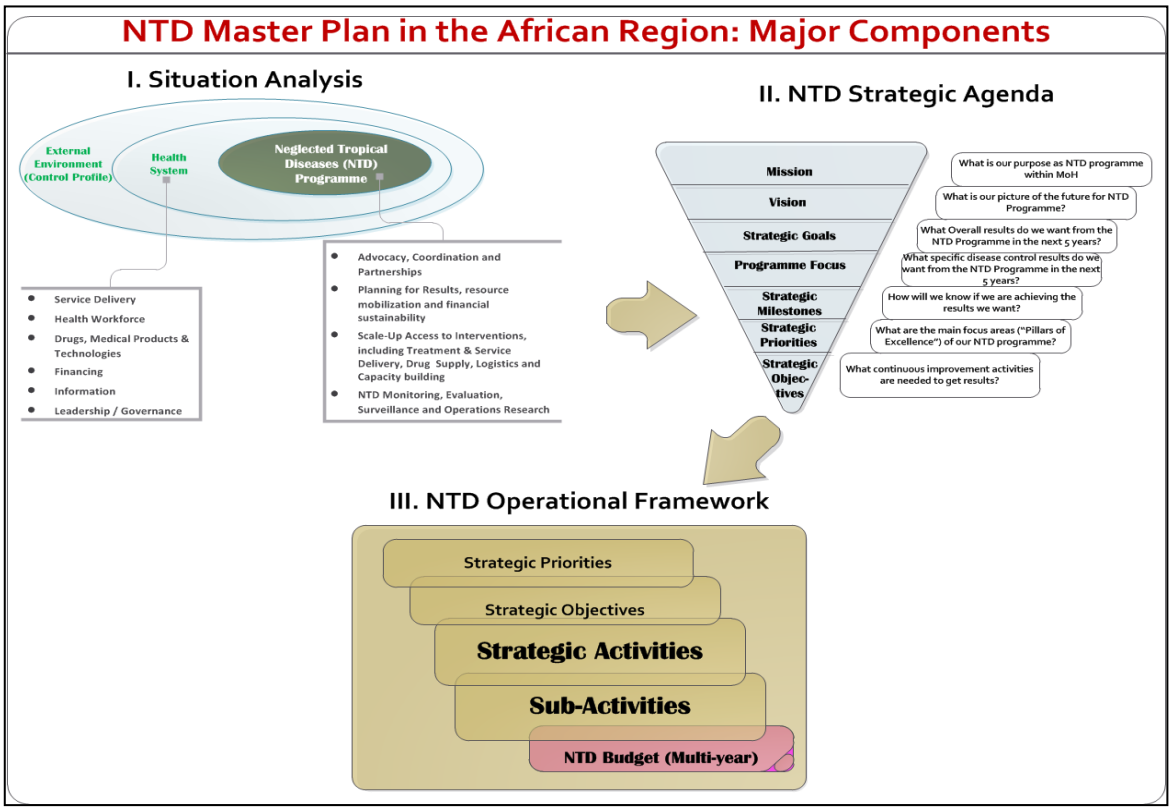


Figure 2: Major components of NTD Master plans



PART 1: SITUATION ANALYSIS

1.1 COUNTRY PROFILE

Table 1: Liberia country socio-demographic and health profile

Topic	Status
Geographic size	111,369 square kilometers
Annual rainfall	4,000 mm (one of the highest in the world)
Natural resources	Iron ore, rubber, timber, diamonds, gold
Independence	July 26, 1847
Executive	President: Ellen Johnson-Sirleaf (2006)
Legislature	Bicameral (Senate and House of Representatives)
Per-capita gross domestic product	US$247 (2010 estimate)
Gross domestic product growth rate	1.8% (2001-2010 estimate), 5.9% (2010 estimate)

Population living on less than $1 per day	76.2%
Population	3,476,608 (32% in Monrovia; 2008 census)
Population growth rate	2.1% (2008 census)
Life expectancy	59.1 years (2010 UNDP)
Under-5 mortality rate	114/1000 live births (2007 DHS)
Maternal mortality rate	994/100,000 live births (2007 DHS)
Access to improved drinking water	75% (93% urban, 58%rural) (2009 LMIS)
Access to adequate sanitation	44% (63%urban, 27% rural) (2009 LMIS)
HIV sero prevalence	2.1% (DHIS 2013)
Supervised childbirth	46% (2007 DHS)
Institutional deliveries	37% (2007 DHS)
Vaccination coverage (full)	51% (2010)
Net enrolment primary school	74% male, 58% female (2000-2006 average)
Net enrolment secondary school	37% male, 27% female (2000-2006 average)

1.1.1 ADMINISTRATIVE, DEMOGRAPHIC AND COMMUNITY STRUCTURES

1.1.1.1 Administrative structures:

The country is divided into fifteen political sub-divisions called counties. These counties are sub-divided into districts; districts into chiefdoms; and chiefdoms into clans; and the clans are further divided into towns and villages. The county governments are headed by superintendents, who are appointed by the President. District Commissioners are also appointed by the President. However, although the paramount, clan, and town chiefs are supposed to be elected by the citizens, they have been appointed by the President since the inception of the Liberian Civil War.

Administrative map of Liberia

1.1.1.2 Demography:

Results of the 2008 Liberia National Population and Housing Census (NPHC) estimated the population of Liberia at 3,476,608 with a growth rate of 2.1%. Based on this growth rate, the current population of Liberia is put at 4, 021, 017. The result of the 2008 NPHC outcome revealed a 65% increase from the 1984 census (2,101,628). Women account for 51% of the population, while men account for 49%.

58.1% are of age 15 years and above, ages 5-14 years 26.5% and ages 0-4 years 15.4%. The fertility rate is currently 5.2, indicating a substantial reduction since 1986: 6.2 in 1999-2000, and 6.6 in 1986. One-third of all Liberians live in Monrovia and, nationally, 47 percent of the population now lives in urban areas. However, while the urban population has grown, the census reported that 40 percent of all households travel more than one hour to the nearest health facility—over two-thirds of households in rural area. Of the 15 administrative

counties, the “big six” (Montserrado, Nimba, Bong, Lofa, Grand Bassa and Margibi) accounted for 74.4% of the total population. The population of Montserrado County more than doubled since 1984 (from 491,078 to 1,118,241).

1.1.1.3 Educational and Literacy rate:

There is a substantial rural – urban differential in education. However, there is little differential by gender in net primary school enrolment (38% male to 37% female) and secondary school enrolment (16% male to 14% female). Public primary school enrolments have increased by 82% but still remain low. Secondary and tertiary enrolment rates are even lower.

Table 2: National population data, schools, and health facilities at district level

Counties	Districts	No. of villages/ communities	Total Population [1]	Pre SAC (12%)	5-14 years (26%)	No. Primary schools[2]	No. Early childhood education level	No. Health facilities[3]
Bomi	*4*	*394*	99,334	11,920	25,827	*99*	*98*	24
Bong	*8*	*516*	393,801	47,256	102,388	*283*	*256*	42
Gbarpolu	*5*	*195*	98,471	11,817	25,603	*106*	*100*	15
Grand Bassa	*7*	*405*	261,793	31,415	68,066	*187*	*150*	30
Grand Cape Mount	*5*	*535*	150,061	18,007	39,016	*136*	*128*	31
Grand Gedeh	*6*	*185*	147,914	17,750	38,458	*105*	*86*	24
Grand Kru	*5*	*157*	68,389	8,207	17,781	*111*	*95*	19
Lofa	*6*	*715*	326,943	39,233	85,005	*264*	*235*	59
Margibi	*4*	*436*	247,894	29,747	64,452	*153*	*143*	45
Maryland	*6*	*232*	160,527	19,263	41,737	*98*	*81*	24
Montserrado	*7*	*429*	1,320,509	158,461	343,332	*445*	*412*	270
Nimba	*6*	*551*	545,598	65,472	141,855	*462*	*447*	72
River Gee	*6*	*128*	78,870	9,464	20,506	*98*	*93*	19
Rivercess	*6*	*483*	84,444	10,133	21,955	*98*	*97*	19
Sinoe	*10*	*298*	120,287	14,434	31,275	*125*	*122*	34
MCSS	-	-	-	-	-	*1*	*15*	-
National	***91***	***1461***	***4,104,835***	***492,580***	***1,067,257***	***2,785***	***2,544***	**727**

[1] 2016 Population data extrapolated from the 2008 population and housing census of the Republic of Liberia: analytic report on population size and composition. The Number of health facilities and primary schools are derived from the Liberia DHIS,

[2] Education statistics for the Republic of Liberia: National statistics booklet 2013.

[3] Liberia's health facility master list, 2015. Ministry of Health

According to 2007 Liberia Demographic and Health Survey (LDHS) report, majority of children have little education, with females less educated than males. Only 5% of females and 13% males have completed higher education. Comparison of 2007; 1999 – 2000 LDHS report shows that there has been some improvement in educational attainment.

1.1.1.4 Community structure:

There are *ninety-one* health districts in Liberia with each of the districts divided into chiefdoms and clans. Every health facility has a catchment population and in each catchment there are Community Health volunteers (CHVs) and Community Directed Distributors (CDDs). Table 1 gives a breakdown of the population by counties, number of communities and the primary schools in the county.

The settlement pattern in counties in the South eastern part of Liberia have dispersed population compared to more nuclear settlement pattern in the central and north western parts of the Country. The population of the communities is almost homogeneously indigenous in rural areas and fairly heterogeneous in townships and cities. The leadership structure in the Liberian communities varies with the types of community. In hamlets, villages and towns there are chiefs (who are supposed to be elected by law but now appointed) guided by councils of elders in decision-making. The townships and cities have commissioners appointed by the president of the Republic and city mayors (who are supposed to be elected by the residents of the cities by law) but are now appointed by the President. Leaders enjoy limited absolute power as decision making is based on formal and informal consultations.

The occupations in communities vary between urban and rural settings. The rural population is involved mainly in subsistence farming activities while the urban inhabitants engage in commercial activities including salaried jobs. Studies in Liberia indicate that introduction of swamp rice farming in some counties have resulted in increased prevalence of S. mansoni and S. haematobium infections. The NTDs Program will involve the Low land Rice Project of the Ministry of Agriculture and the farmers' association and agriculture extension agents in the NTDs programming.

There are numerous active community associations and/or structures in almost all communities. Some of these include churches, mosques, women organizations, youth groups, professional groups and social and secret societies for example.

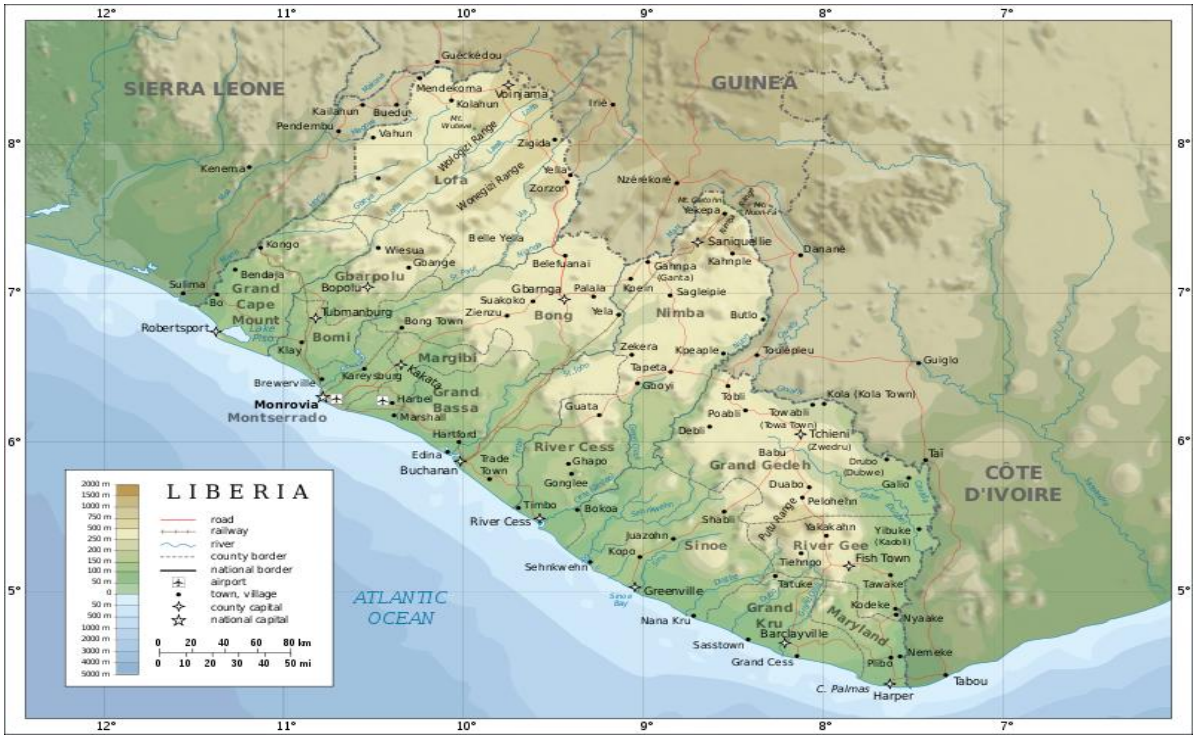
Health and development programs in the community are usually implemented in active cooperation with the heads of active community associations. However, the blessing of community leader(s) must first be obtained. Usually, there is an identifiable contact person for each association for information dissemination. The NTDs Program will review existing Onchocerciasis advocacy and communication strategic plan and adapt it for an integrated NTDs program based on formative research in targeted communities. In rural areas, false burials (postponed feasts for important dead relatives); initiation of girls into traditional schools and other social communal activities are conducted generally during the dry season in most communities. In urban and rural areas, national holidays (i.e. Christmas (December 25), Independence Day (July 26), New Year Day (January 1), Easter Day, Flag Day (August 24) and the end of Ramadan among others) are observed. The calendar of important events and off- seasons will be used in developing NTDs implementation plans that suit communities.

1.1.2 GEOGRAPHICAL CHARACTERISTICS

Liberia is located at latitude 6^0 30 North of the Equator and longitude, 9^0 30 West of the Greenwich Meridian, with a landscape of approximately 111,369 square kilometres. It is bordered by the Atlantic Ocean to the south, Côte d'Ivoire to the east, Sierra Leone to the northwest and Guinea to the northeast. Administratively, it is divided into 15 counties and had a total population of 4,021,017 per growth rate for 2015. The Country has 350 miles of Atlantic front, with three distinct topographical areas: (1) a flat coastal plain of some 10 to 50 miles, with creeks, lagoons, and mangrove swamp; (2) an area of broken forested hills with altitudes from 600 to 1200ft, which covers most of the Country; and (3) an area of mountains in the northern highlands, with elevations reaching 4,540 feet in the Nimba Mountains and 4,528 ft. in Mount Wutivi in the Wologizi Range**.** There are many rivers and lakes with the major ones being St. John, St. Paul, Mano, Cestos, Farmington and Lofa rivers and Lakes Piso and Shepherd.

In Liberia, the Lofa, St. Paul and St. John Rivers are the main rivers which are parallel to each other and flow perpendicular to the coast. Waterfalls, rapids, rocks, and sandbanks occur frequently in upstream sections of these rivers situated in the north. The central regions of Liberia serve as breeding grounds for Simulium vector. However, as the main rivers and their tributaries meander towards the ocean, they become sluggish and serve as breeding grounds for vectors of other NTDs such as Schistosomiasis and Lymphatic Filariasis. The blackish water swamps which extend along the entire coast of Liberia provide breeding grounds for mosquitoes with higher transmission of filarial infections. Liberia has a tropical climate that is humid all year round with average temperatures ranging from 70 degrees Fahrenheit (21 degrees Celsius) 80 degree Fahrenheit.

There are relatively small variations between day and night and between seasons. There are two seasons – the rainy or wet season from May to October and the dry from November to April. The annual rainfall averages 170 inches (4.320 mm.) inland. The average humidity on the coastal belt is 78% during the wet season, but it is liable to drop to 30%



from December to March during the Harmattan season. The occurrence of rainfall throughout the year results in the continuous transmission of malaria and Filariasis in Liberia. However studies on transmission of Schistosomiasis in Liberia indicate that the densities of Bulinus globosus and Biomphalaria pfeifferi snail host and cercarial infection rates are markedly reduced by heavy rains.

Geographical map of Liberia

NTDs are endemic in the Mano River Union Region (Liberia, Sierra Leone, Guinea, and Ivory Coast). These countries bordering Liberia have similar drainage, topography and vegetation. Communities in the border areas are usually of the same tribes and there is regular movement of people across the international borders.

Therefore, trans-border collaborative efforts by all four member countries of the Mano River Union are needed to control or eliminate NTDs especially Onchocerciasis and Lymphatic Filariasis.

SOCIO-ECONOMIC STATUS AND INDICATORS

1.1.2.1 **Social Economy Status**

Liberia is a country richly endowed with mineral resources and a favorable climate for agriculture. Liberia exports highly depend on agricultural productivity. The major export items for Liberia are rubber, diamond, gold, timber, iron ore, coffee, crude oil and cocoa. The Liberian economy has been in decline since the 1970s due to extreme social and political upheaval. The war destroyed productive capacity and physical infrastructure on a massive scale. The result has been an economic decline and the deepening of national poverty. Liberia achieved food security and middle income status in the 1970s but is striving to regain this status.

Per capita Gross Domestic Product (GDP) declined from US$1,269 in 1980 to US$163 in 2005, a decline of 87 percent. Per the World Bank, Liberia's per capita GDP as of 2014 stands at $457.9. It is estimated that three fourth of the population is living below the poverty line; on less than US$1 a day. The South-Eastern region of the country, particularly Sinoe, Grand Gedeh, River Gee, Grand Kru and Maryland counties, lag behind the rest of the country in terms of socio-economic development. During the war, agricultural production dropped as people fled their farms and markets closed. Mining and timber activity nearly ceased, rubber plantations closed, manufacturing dropped sharply and services ground to a halt. Basic infrastructure was badly damaged by the conflict.

There was virtually no public source of electricity or piped water in the country for 15 years until recently when power and water was restored to parts of Monrovia in July

2006. Schools, hospitals, and clinics were badly damaged, and most government buildings were in shambles.

Many roads are still impassable, which seriously constrains peace building efforts, weakens economic activity and undermines basic health and education services. Years of mismanagement have left Liberia with a huge external debt burden.

The majority of the population works in agriculture and subsistence farming or the informal economy in trading and small scale production. The burden of NTDs adversely impacts agricultural production. Besides, the daily income of patients affected by NTDs reduces thereby negatively affecting efforts by government to reduce poverty. Many families and communities rely on external remittances from relatives abroad and spin offs from donor-funded investments through international NGOs. The current government has taken a range of measures to overhaul its financial management systems and spur renewed economic activity. Among the measures taken to reposition the economy are the introduction of cash based balanced budget and new expenditure control mechanisms with strengthening of enforcement and collection of customs duties and other taxes. The Government is implementing the Governance and Economic Management Assistance Program (GEMAP), which provides international experts to support financial agencies of the Government. The Government also joined the Extractive Industries Transparency Initiative (EITI) to strengthen accountability and transparency in managing funds generated through natural resource-based activities. Government has passed a new forest reform act to strengthen over-sight and regulation of the forestry sector and revision of major concession agreements to increase the benefits for the Liberian people and concluded new agreements to restart oil palm production.

1.1.2.2 **Health Indicators**

The country's health indicators, though improving, remain unsatisfactory. According to the 2007 Liberian Demographic Health Survey, childhood mortality has decreased substantially. Infant mortality has declined from 139 per 1000 live births to 71 per 1000 live births; under-five mortality has also declined from 219 to **94 per 1000 live birth 2013 (Health Assessment Report 2015),** representing a halving of the 1992-1996 infant and under-five mortality rates.

Notwithstanding, Maternal Mortality Rate in 2007 was 994 deaths per 100,000 live births **and in 2013 was 1,072 (Health Assessment report 2015),** representing one of the highest in the world. Life expectancy at birth has substantially decreased from 55 years in 1980 to 47.7 years in 2006. But recent data in a 2015 Liberia-WHO statistical profile states that the life expectancy was 62 in 2012[1].

Mortality rates are slightly higher in rural than urban areas, but they differ markedly by region. Infant mortality ranges from 69 deaths per 1,000 live births in Monrovia to 142 deaths per 1,000 live births in South Central region. The mortality decreases with mother's education. Infant mortality is only 59 deaths per 1,000 live births among children whose mothers have secondary and higher education compared to 107 among children with uneducated mothers. Mortality also decreases with household wealth. The coverage rate for potable water is 51.4% and sanitation is 39.4%[5]. The Ebola Virus Disease (EVD) crisis emerged on March 30, 2014 from Lofa County, where the first imported case was diagnosed. The weakness of the health system to deal with the shock and emergencies was visible and led to the near collapse of the system. From March to December 2014, 8,044 cases (3,150-suspected, 1786-probable and 3128 confirmed) were reported, among these cases, health works accounted for 370, of which 199 died.

1.1.3 Transportation and communication

Transportation in Liberia is mainly by land. Water and air transportation, in country, are still relatively undeveloped.

1.1.3.1 Land Transport

The major means of land transport in Liberia is by paved, unpaved and path roads. There are three major paved roads linking Monrovia to the rest of the country and neighboring countries. However, most of the paved roads have extensively depreciated making it difficult for vehicles to ply especially during the rainy season. ***Among them includes the Monrovia-Gbarnga–Ganta highway which is under re-construction.***

[1] Liberia: WHO statistical profile. January 2015. Accessed at: http://www.who.int/gho/countries/lbr.pdf?ua=1
[5] Liberia MDG report 2008

The western part of the country is connected by the Ibrahim Babangida highway (paved) which links Monrovia to Sierra Leone. Monrovia-Gbarnga highway connects Lofa in the north to Guinea, Nimba in north eastern part of the country and also connects Guinea and some portion of the Ivory Coast. This highway also connects south eastern counties of Grand Gedeh, River Gee and Maryland that have borders with Ivory Coast and also linked Grand Kru. Monrovia Sinoe highway connects the rest of the South Western counties of Grand Bassa and Rivercess including Sinoe in the south east. Over 75% of roads in Liberia are either unpaved or path. Most of the unpaved roads become inaccessible to vehicle during the rainy season. As a result, people use motorbikes or walk long distances to reach their destinations including schools, and health facilities. The mode of road transport in the country is by taxis, buses, pickups and motor bikes. In the interior of the country, transportation is a major challenge due to the very bad road condition. The distances between major cities can be found in appendix 2.

The terrain in some counties especially in the Southern Eeatern region is rugged and covered with two large forest reserves and are traversed by numerous rivers and tributaries. Most of the roads in the region are in deplorable condition, with very muddy and deep holes filled with wet mud and broken wooden bridges. This situation partially disrupts road access to NTDs target communities in most of the counties especially in the rainy season. Travelling in the region from Monrovia is anything between nine hours to twenty four hours in the dry season. During the rainy season, only four wheel drive and heavy duty trucks can access difficult to reach areas. Over flooding of river banks during the peak of the rainy season also disrupts access to NTDs endemic communities. Other modes of transport are canoes, motorbikes and by foot. Majority of the activities will be implemented during the dry season when there is better access to the remote communities.

1.1.3.2 Water transport

There are four main seaports in Liberia which include the Freeport of Monrovia, Buchanan port, Greenville port and Harper port. Canoe transport is widely used in some parts of the country mainly: Rivercess, Sinoe, Grand Kru, Maryland, Cape Mount and Grand Bassa counties to access towns and villages and farms.

1.1.3.3 Air transport

There are two major airports in Liberia including Robert International Airport and the James Spring Airfield. In addition, there are few airstrips in Lofa, Grand Gedeh, Sinoe, River Gee, Rivercess, Bomi, Grand Kru and Maryland Counties where domestic flights land.

1.1.3.4 Communication system and network

There are four major mobile phone companies operating in Liberia as well as land lines and many pay phones. More than half of the landscape of the country is not covered by mobile communications. Internet access is not very common in most counties of Liberia. Government agencies and NGOs have been using High Frequency Radio for communication. Presently, the MOH is deploying high frequency radio to health facilities to link referral health facilities.

In communities, communication for dissemination of important information is through the leadership structure. Upon proper authorization, town announcers, information drummers, print media and electronic media may be used when necessary and appropriate to disseminate information. In the cities used are made of things like loud speakers in market places and street corners to disseminate information. A house-to-house method may be used in closed urban communities as well as rural towns and townships.

In most of the major cities there are community radio stations giving out information. In Monrovia there are a number of FM radio stations. Newspapers coverage is limited to major cities. There are three short-wave radio stations in Monrovia that cover almost the entire country. These stations include: ELBC, ELWA and UNMIL Radios. Although there is a network of communication system in the country that could be used to support the implementation of NTDs, there is still a need for improvement to ensure nationwide coverage to the remote communities where the NTDs are prevalent.

1.2 HEALTH SYSTEM SITUATION ANALYSIS

1.2.1 HEALTH SYSTEM GOALS AND PRIORITIES

The health system in Liberia is coordinated and steered through the Ministry of Health (MOH). The MOH has the mandate to reform and manage the health sector to effectively and efficiently deliver comprehensive, quality health and services that are equitable, accessible and sustainable for all people in Liberia. Health services are provided at

three levels of hospitals, health centers and clinics. A total of 727 public and private health facilities function in Liberia[2]. Health has been decentralized to all the counties in Liberia and managed by a county health team .The health priorities are focused around several diseases like malaria, HIV, TB, disease of maternal death and common diseases of childhood (diarrhea diseases, measles, pneumonia and malnutrition) which causes the highest level of morbidity among under 5's. However, the system also factors in services for epidemic-prone diseases and recently neglected tropical diseases (NTDs).

1.2.1.1 Mission and Vision

The mission of the MOH is to reform the health sector to effectively deliver quality health and services to the people of Liberia. Its vision is a nation with improved health and status and equity in health. The Ministry regards health as a basic human right, and as such has devoted itself to ensuring that every Liberian has access to health and services regardless of economic status, origin, religion, gender or geographic location.

1.2.1.2 Health priorities and priority setting

In an effort to align its priorities, the MOH developed a five year Health Policy and Plan 2007 – 2011 and subsequently a 10 year Health Policy and Plan 2012 – 2021. The basis for the initial 5 year plan was provision of Basic Health Services to all. The updated 10 year plan improved on the BPHS to incorporate all essential health services, thus the Essential Package of Health Services (EPHS).

The Health Policy and Plan of Liberia are centered on four strategic orientations of primary health care, decentralization, community empowerment and partnerships for health.

The operational and integrated framework for implementing the National Health Policy and Plan is based on four key components -- 1) Essential Package of Health Services; 2) Human Resources for Health; 3) Infrastructure Development; and 4) Support Systems.

The 2007-2011 National Health Plan laid more emphasis on: Maternal and New-born Health, Child Health, Adolescent and Reproductive Health, Communicable Diseases, Emergency and Mental Health. However, the 2012-2021 National Health Plan introduced the EPHS focusing on strengthening the current health system, introducing new categories of health services

[2] Liberia's health facility master list, 2015. Ministry of Health.

including NTDs and providing comprehensive services within the existing categories. NTDs are in the top eight of the twelve priorities of the national health plan (2012 - 2021). The EPHS provides a greater link between primary level and secondary level health facilities to create a more holistic healthcare system in Liberia providing high quality services.

The operational and integrated framework for implementing the NTDs master plan is elaborated in the 10 year National Health and Policy based on the key components 1) Essential Package of Health Services (EPHS); 2) Human Resources for Health; 3) Infrastructure Development or Service Delivery Points (SDPs); and 4) Systematic Components (Health Systems Support).

The Basic Package of Health Services (BPHS) which served as a cornerstone for the implementation of the 2007-2011 National Health Plan was redesigned and named the Essential Package of Health Services (EPHS) to provide an expanded and more comprehensive health package. The key principles for inclusion of services into the EPHS are based on a Primary Health Care (PHC) model with emphasis on high-impact, evidence-based interventions; integration of services; standardization of protocols, guidelines and procedures; phased expansion of services towards a more comprehensive package; and consideration of urban and rural differences. The framework of Community Directed initiatives which emphasizes greater community involvement and ownership in the implementation of health care interventions in line with PHC concept will be the cornerstone of NTDs programming at the community level.

The Investment Plan for Building a Resilient Health System in Liberia was developed in response to the Ebola Virus Disease outbreak of 2014-2015, The priorities for investment will focus on improving access to and utilization of quality EPHS through strengthening health systems and ensuring the health systems are resilient to outbreaks and epidemics and creating an enabling environment through community involvement and good governance and strengthened leadership at all levels.

Effective EPHS coverage will be improved through addressing challenges in (1) access to the EPHS services (removing physical, financial and socio-cultural barriers); (2) quality of provision of the EPHS services (better client experiences, infection prevention, and

adherence to standards of care); and (3) adequate community demand for the EPHS services (community awareness, and better health seeking behaviours).

1.2.2 Analysis of the overall health system

1.2.2.1 Service Delivery

The Department of Health Services is the technical arm and nucleus of the Ministry of Health. It is headed by the Deputy Minister for Health services who is also the chief Medical Officer of the Republic of Liberia. Additionally, the department has two Assistant Ministers: one for curative services and the other for preventive services. There are two bureaus within the department: 1) The Bureau of Curative Services responsible for the supervision and coordination of county health care delivery services in communities and health facilities and 2) The Bureau of Prevention and control of diseases nation-wide. NTDs are supervised by the bureau of Preventive services.

Consistent with the national health policy, the national healthcare system of Liberia is based on three levels of care: primary, secondary and tertiary. This is provided through four health care sub-systems as described below:

i. Primary Care:

The Community Health System:

This system is the main primary care provider. It includes:

- Household Health Promoters and Community Health Volunteers (Trained Traditional Midwives (TTMs), general Community Health Volunteers (gCHVs) and Community Directed Distributers (CDDs)
- Maternal and Child Health level one clinics (MCHs):

  The MCH clinics focus on basic maternal, infant and child healthcare as well as family planning services to isolated clustered communities with a population of up to 3500. They are also able to provide basic primary care to their catchment population.

- Basic PHC clinics: Cover an effective catchment population of 3,500 to 12,000 within a 5 kilometre radius and provide outreach services to the portions of their catchment population outside of this radius that are also more than 5 kilometers from an MCH clinic.

- Integrated Outreach Programs: Based at PHC clinics, they provide basic primary care to isolated catchment communities that are more than one hour walk (5km) from the clinic.

ii. Secondary Care:

a. District Health System:

This system is the first provider of secondary care, including General Practice, Internal Medicine and Basic Emergency Obstetric and New-born Care (BEmONC). It receives referrals from the community system to health centers and district hospitals. The District System has a catchment population of 25,000 to 40,000 and includes:

- *Health Centers:* Health Centers receive referrals from 4 to 5 clinics in the district and have up to 40 beds and a level one laboratory.
- *District Hospitals:* Where a dense catchment population, large network of clinics and far distance from a county hospital warrants it, Health Centers may upgrade to District Hospitals with higher clinical capacity, including emergency surgery and CEmONC.

b. **County Health System:**

This system provides expanded services within the secondary level of care. It consists of a County Hospital (more than one where necessary) that receives referrals from District Hospitals and Health Centers. The County Hospital has a catchment population of about 200,000 and provides general surgery, pediatrics, general medicine, obstetrics and gynaecologic services (including CEmONC). It will have about 100 beds with an intensive care unit, a level two laboratory and basic radiology services. To ensure that hospital services are used within a referral system, the County Hospital should have a detached outpatient facility for the provision of primary care.

iii. Tertiary Care:

National Health System:

This system is the main provider of tertiary level care. It consists of two types of hospitals: Regional Hospitals and the National Hospital, John F. Kennedy (JFK) Medical Center.

- **Regional Hospitals:**

  Receive referrals from 3-5 County Hospitals that are located within a reasonable distance to them. Each regional hospital will have a bed capacity of approximately 250 beds, serving a catchment population of over 500,000 people.

  These facilities will also play an active role in capacity building of the county hospitals and serve as training sites complementary to the National Referral Hospital.

  They may develop from a County Hospital that is upgraded, in which case they will also maintain the function of a territorial referral hospital (e.g., receive referrals from the district level).

- **JFK Medical Center:**

  JFK, the National Referral Hospital, is the specialized referral facility and teaching hospital - in collaboration with regional-level facilities - for physicians, sub-specialists and allied health professionals. It will have an approximate 500-bed capacity with advanced laboratory and radiology capabilities.

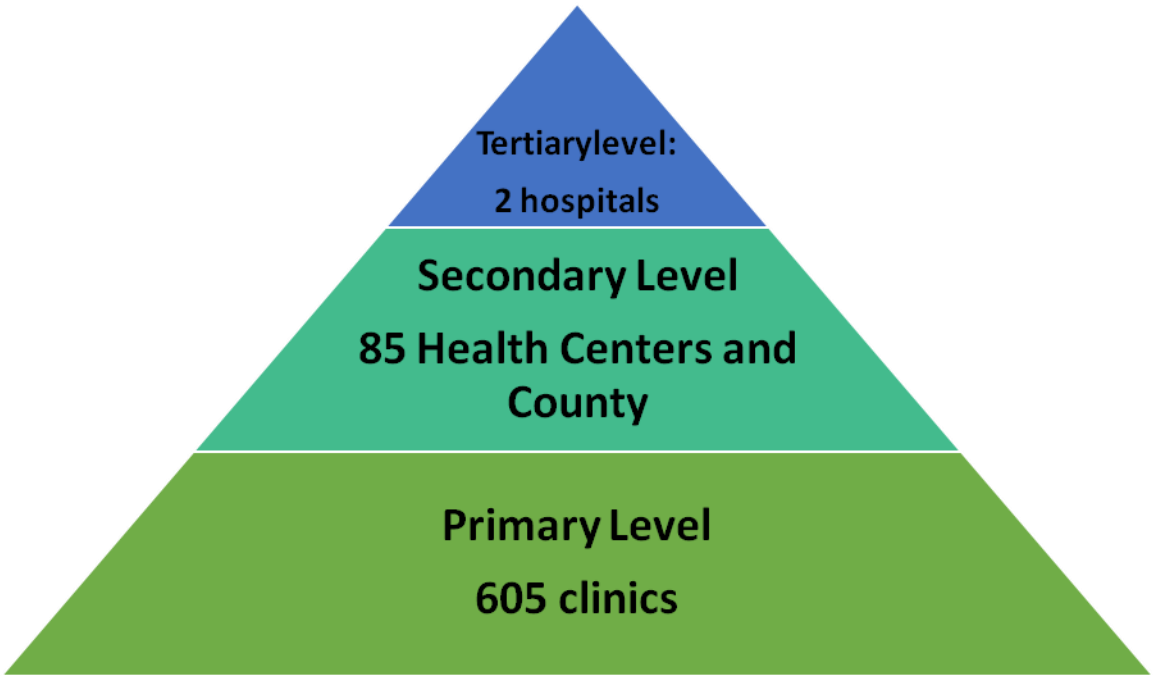


Figure 5: Pyramid showing Health Facilities in Liberia

1.2.2.2 Health work force

The MOH recognized the human resources as the most valuable asset in the health sector. In 2009, a National Census recorded 9,196 health workers, an increase of 5,230. Of these workers, 62% (5,989) are clinical workers and 38% (3,207) are non-clinical workers. The ratio of patient to trained health worker improved 1:1,225 in 1995 (WHO) to 1:580 in 2013 (DHS 2013). In terms of ensuring gender equity in employment, no gender policy has yet been developed to guide health and workforce recruitment. The 2009 Human Resource Census identified that 61.9% of the total workforce is male and 38.1% female; however, female workers make up 48.7% of the clinical cadre. There is a dearth of qualified manpower such as medical doctors and physician assistants in the health sector and the distribution of existing manpower is skewed in favour of Montserrado where Monrovia, the country's capital city is located.

The Human Resources unit within the Ministry of Health is responsible to oversee human resource policies and plans for the health workforce, as well as to collect and disseminate human resource data. A human resources information and payroll system (HRIS) has been installed (hardware and software) at the central level. Appropriate central ministry staffs have been trained on the HRIS, but the system is not being used to its full capacity. County human resource officers have been employed in all 15 counties to manage

recruitment and deployment, but they have not been trained on the HRIS.

To enhance worker performance, productivity and retention, leadership and management training has been carried out for all County Health Officers. A short to medium term transitional and long-term comprehensive program will be launched to produce a gender-balanced health workforce with the skill mix needed by the health services at different levels of care. This is a huge endeavour, successful only in the long term.

The human resource component of this Plan strives to ensure that the right numbers of CDDs are in the right places at the right time, and with the right skills. This workforce, with support from community and county partners, will guarantee the delivery of the services to meet the needs of the people.

Human Resource management authority at the county will be strengthened and will model functions of the Community Health volunteers and central level HR Unit. County Human Resource officer will manage the recruitment, deployment and appraisal of staff and periodically collate HR information using standard formats, for onward transfer to the Central level HR Unit.

Table 3: Status of Human Resource Training for CM-NTDs

COUNTY	DISEASE	CDD/ CHV	CHA	NURSES / PA	LAB TECH	PHYSICIAN/	TEACHER	ORTHOPEDIC	PHYSIO -	PHARMACIST
Nat'l.	BU	0	0	14	2	0	42	0	0	0
	Lepr	0	0	8	0	0	0	0	0	0
	LF:	0	0	0	0	0	0	0	0	0
Margibi	BU	0	0	36	0	0	0	0	0	0
	Lepr	0	0	1	0	0	0	0	0	0
	H&L	0	0	0	0	0	0	0	0	0
Montserrado	BU	0	0	156	0	0	0	0	0	0
	Lepr	0	0	1	0	0	0	0	0	0
	H&L	0	0	0	0	0	0	0	0	0
Grand Bassa	BU	0	0	36	0	0	0	0	0	0
	Lepr	0	0	4	0	0	0	0	0	0
	H&L	0	0	1	0	0	0	0	0	0
Bomi	BU	0	0	38	0	0	0	0	0	0
	Lepr	0	0	2	0	0	0	0	0	0

	H&L	0	0	0	0	0	0	0	0	0
Cape Mount	BU	0	0	38	0	0	0	0	0	0
	Lepr	0	0	2	0	0	0	0	0	0
	H&L	0	0	0	0	0	0	0	0	0
Gbarpolu	BU	0	0	20	0	0	0	0	0	0
	Lepr	0	0	2	0	0	0	0	0	0
	H&L	0	0	0	0	0	0	0	0	0
Bong	BU	450	0	119	2	5	0	0	0	0
	Lepr	0	0	2	0	0	0	0	0	0
	H&L	0	0	3	0	0	0	0	0	0
Lofa	BU	441	0	134	2	6	0	0	0	0
	Lepr	0	0	2	0	0	0	0	0	0
	H&L	0	0	0	0	0	0	0	0	0
Nimba	BU	900	0	346	1	3	0	0	0	0
	Lepr	40	0	173	0	0	0	0	0	0
	H&L	0	0	3	0	0	0	0	0	0
Grand Gedeh	BU	0	0	26	0	0	0	0	0	0
	Lepr	55	0	110	0	0	0	0	0	0
	H&L	0	0	3	0	0	0	0	0	0
Grand Kru	BU	0	0	26	0	0	0	0	0	0
	Lepr	0	0	84	0	0	0	0	0	0
	H&L	0	0	0	0	0	0	0	0	0
Rivercess	BU	0	0	25	0	0	0	0	0	0
	Lepr	0	0	1	0	0	0	0	0	0
	H&L	0	0	1	0	0	0	0	0	0
River Gee	BU	0	0	26	0	0	0	0	0	0
	Lepr	0	0	83	0	0	0	0	0	0
	H&L	0	0	3	0	0	0	0	0	0
Sinoe	BU	0	0	43	0	0	0	0	0	0
	Lepr	0	0	0	0	0	0	0	0	0
	H&L	0	0	0	0	0	0	0	0	0
Maryland	BU	0	0	33	0	0	0	0	0	0
	Lepr	71	0	109	0	0	0	0	0	0
	H&L	0	0	2	0	0	0	0	0	0
Total	**BU**	**1791**	**0**	**1116**	**7**	**14**	**42**	**0**	**0**	**0**
	Lepr	**166**	**0**	**584**	**0**	**0**	**0**	**0**	**0**	**0**
	H&L	**0**	**0**	**16**	**0**	**0**	**0**	**0**	**0**	**0**

1.2.2.3 Health Information

The HMIS Division coordinates the collection, processing and management of health and health- related data from health facilities, county health teams and other health institutions in the country. The National Health Policy mandates that the Health Management Information System (HMIS) be strengthened in order to better collect, organize and maintain relevant data in a timely way. The system will have the capacity to produce reports related to health sector development, including the analysis of trends, in order to understand the evolution of the health sector over time.

The integrated HMIS covers the following areas: financial information, human resources, physical assets and equipment, health care service delivery statistics and surveillance. This system will be used to capture information on all NTDs from the counties to national level.

Some NTDs have also been incorporated into the Integrated Disease Surveillance and Response (IDSR) guideline for case detection, reporting and management.

IDSR is the strategy adapted and used by the Ministry of Health for both passive and active epidemiological surveillance activities. Data on NTDs with the IDSR are captured on a weekly basis from all counties and sent to central office and then to NTDs office.

1.2.2.4 Medical Product

The pharmaceutical and health commodities system in Liberia was severely affected during the civil conflict. Attention was paid to this area during revision of the National Health Policy and development of the accompanying National Health Plan. The overall goal for the pharmaceutical sector established in the health policy is to “increase access to efficacious, high-quality, safe and affordable medicines for the people of Liberia.” The immediate objective is to use available resources to develop pharmaceutical services to meet Liberia’s requirements in the prevention, diagnosis and treatment of diseases by using efficacious, high quality, safe and cost-effective pharmaceutical products through strengthening mechanisms for drug management, control, information systems, regulation and registration.

The Supply Chain Management Unit (SCMU) is the management structure responsible for overseeing all supply chain activities within the Liberian Public Health Supply Chain. The SCMU strives to maximize customer service based on the resources available by

facilitating seamless linkages between organizations and functions within the supply chain. SCMU functions include increasing the visibility of data up and down the system, facilitating greater coordination between stakeholders and ensuring alignment of demand with supply via data-based quantifications and the development of unified procurement plans. As a focal point for coordination, the SCMU is involved in virtually all supply chain activities and system strengthening interventions. It serves as the primary mechanism for institutionalizing good supply chain management practices and linking logistics activities throughout the supply chain. Given the critical role the supply chain plays in ensuring that the MOH meets it mandate, the SCMU reports directly to the Deputy Minister/Chief Medical Officer.

The National Drug Service (NDS) is an autonomous, publicly-owned agency, mandated to supply the health sectors with medicines and other critical health commodities. Regulation is deficient and private dealers freely import, distribute and sell medicines. However, the circulation of counterfeit, sub-standard and expired medicines is inconsiderable.

The NDS manages inventory of drugs with a computerized system. Upon arrival of a shipment, the name and quantity of the medication, the batch number, the price unit and expiry date are entered in the system. Supplies are sent to drug depots and are recorded in the system so that any delivery can be tracked by batch number. NDS has designed updated software which protects data entries and records the supply levels of sub-storage areas, as well as the central warehouse. It also contains a feature that automatically notifies NDS of the identity and location of products that are close to expiry.

At the regional level, specifically at the drug depots, there is no MIS computerized capacity due to the lack of infrastructure and qualified people to manage the system. The information is being managed manually with an organized system of records keeping.

Drugs and medical supplies are essential aspect of health sector support system which the NTDs plan seeks to address. The program will take advantage of available resources to implement the National Supply Chain Master Plan and strengthen the capacity of health workers to utilize the updated National Formulary (NF) and Standard Treatment Guidelines to deliver the Essential Package of Health Services (EPHS) at all service delivery levels. The program in collaboration with the CHT will ensure that the quality standards set

for drugs and their use are adhered to and the monitoring and evaluation of all products relating to pharmaceuticals in the country is fulfilled through improved inspection, support supervision and reporting. Standard commodity reporting instruments will be made available at every service delivery point to generate consumption and stock information for decision making and quality service delivery and planning.

1.2.2.5 Pharmaco-vigilance System

Pharmaco-vigilance, a drug safety monitoring system, is used to capture adverse effects of drugs and quality of products used in the health system. The Government of Liberia is committed to ensuring the quality, safety, and efficacy of medicines and health products. Under current law, the monitoring of drug quality falls to the National Pharmacy Board headed by the Chief Pharmacist within the MOH. The National Pharmacy Board mandate is limited, thus enforcement of quality standards is not currently sufficient.

The National Pharmacy Board has established the Liberia Medicines Regulatory Commission (LMRC). LMRC was set up to draft legislation, the Liberia Medicines and Health Products Regulatory Act (LMHRA). The LMHRA is the authority responsible for conducting registration of all medicines and health care products to ensure quality of medicines in Liberia. Upon enactment of the law, the LMRA will be responsible for ensuring that all drugs entering Liberia meet quality standards.

For the Private sector, pre-shipment inspection will be enforced at the source of goods to ensure only those goods that are registered and have the necessary certificates to confirm quality are loaded for shipment.

Currently, surveillance officers in the counties are earmarked to collect adverse medicine related reactions. The department intends to conduct a nationwide workshop to introduce the forms that have been developed to capture all adverse medicines and other commodities related reactions.

1.2.2.6 Health financing

The MOH is at the moment working toward developing a national health financing policy and strategic plan. According to the National Health Account (2009/2010) assessment

reports[3], the total institutional health expenditure in 2009/10 was USD 126,640,438 which is 13.6% of the country's GDP. This represents a per capita expenditure of USD $32.35. Of total government expenditure, 6.79% was directed to health. Most expenditure on health come from donors (82%), Household spending at (35%), spending on health was USD$10 per person. It is also reported that public, private and NGO sectors spending accounted for 29%, 3%, and 68% respectively.

Public facilities provided more health care (49%). With the total amount allotted to health care services, curative care accounted for 48%, Pharmaceuticals 10.0%, Prevention and public health programs 28% and Health administration 92.0%. Government spending on health 6.79% is inadequate to support the implementation of the national health plan. In order to fill the gap created, the Government, in partnership with its donors, has agreed to set up a pool fund mechanism where all interested donors' funding are placed in one basket to support priority intervention of the National Health Plan.

As NTDs and other conditions are being prioritized and included in the new national health plan, it will receive similar support as other diseases.

Liberia is currently committed to free health policy at the point of service delivery; this policy was declared during the UN General Assembly in November 2009 by the President.

1.2.2.7 Leadership and Governance

The Department of Health Services, through the Preventive Services, is responsible to coordinate the affair of the disease prevention program. There are 17 programs under the Bureau of Preventive Services.

The Program Director for NTDs is responsible for the strategic direction of the program, and to provide regular program up date to the Deputy Chief Medical Officer for Health Services (DCMO-PS) or the Chief Medical Officer (CMO) on the program activities. Program management at county level is the sole responsibility of the County Health Team; it is at this level that directs implementation of technical activities begins and is rolled down to the community level.

[3] Liberia's second-round national health accounts; Part 1: institutional health spending 2009/10

Liberia developed a National Health and Social Policy in 2011 to run for 10 years until 2021. Following the Ebola virus epidemic that hit the country in 2014 and 2015, an Investment Plan for Building a Resilient health System in Liberia for the period 2015 – 2021 was developed. In both plans, the Neglected Tropical Diseases have a place of choice, being considered for assessment in the first 3 years of the plan and implementing control interventions throughout the remaining period of plan. The national health policy and the investment plans are in line with the Sustainable Development Goals (SDGs)[4] especially in its goal N^{o} 3.3 as far as tackling the NTDs is concerned. The NTDs Master Plan will therefore implement strategies that will strive to contribute towards achieving the objectives of the national health plans and the SDGs

Decentralization of management and control of the health services has been a major reform instituted in Liberia. The county health team structure is being strengthened to ensure that decisions for health are made at their level. Partnership has been strengthened with regular meetings of coordination being conducted and joint supervision.

The national level organizes the strategic planning but each county also develops its own county work plan which feeds into the bigger plan. Micro planning for NTDs is included in the county planning process.

There are several coordinating mechanisms organized at the central level of MOH. The Department of Health services coordinates all disease programs. However, technical working groups are also formed to coordinate different disease conditions. The NTDs Program will constitute a National Steering Committee, and a secretariat in addition to the technical working group. They will together provide oversight in the following areas: Policy formulation, advocacy, Coordination at inter-Ministry and inter-Agency level, review of progress and evaluation of reports and mobilization of resources for program activities.

1.2.2.8 Inter-sectoral collaboration

The MOH seeks strong, structured partnerships around shared objectives and approaches, within and outside the health sector, required improving the health and status of the Liberian people.

[4] Universal sustainable development goals: understanding the transformational challenge for developed countries. Report by the stakeholder Forum, May 2015.

The principles guiding the policy are health and as a basic human right, equity, efficiency, sustainability and accountability. The approach encompassing decentralization, community empowerment and partnership shall be followed in the enforcement of the policy.

Liberia supports effective partnerships that are characterized by continuous and frank consultations, information sharing, clear rules of engagement and conflict resolution, transactions, and explicit incentives. Partnerships are guided by the government to ensure that partner's actions are coherent with the principles of the National Health Policy. The government has established platforms for enhancing planning, learning, sharing and review among the partners.

In line with its renewed commitment to build capacity of County health teams, in managing partnerships is shifting the paradigm from humanitarian and vertical approaches to a horizontal, integrated health development

The Ministry of Health has forged strong collaboration with line ministries and other government agencies in planning and implementation of health care delivery activities. Ministry of Health is collaborating with Ministry of Internal Affairs in carrying out advocacy to policy makers at county, district and community levels. The Ministry also collaborates with the Ministry of Information and media organizations to implement the national health Promotion plan and with the Ministry of Gender, Children and Social Protection to implement the national gender policy. The NTDs Program will take advantage of the existing government institutions to implement its communication and advocacy plan when put in place. The joint World Bank/Government of Liberia Agriculture Development Projects established Schistosomiasis Surveillance Units in affected counties. The main function of the surveillance units was to collect baseline data on the prevalence of schistosomiasis and other helminths infections in these Agriculture Development Project areas among other activities. The NTDs program will revive this collaboration with Ministry of Agriculture and Liberia Institute of Biomedical Research (LIBR), as well as establish new collaborations with the universities in operational research activities in the following areas:

- use of field laboratories and personnel to conduct evaluation surveys
- use of veterinary staff for vaccination of dogs in rabies control

- involve agriculture extension staff in community mobilization, supervision of MDAs
- involve farmers' cooperative associations in resources mobilization and other MDA activities

The Ministry of Health collaborates with Ministry of Education through its School Health Division to conduct school-based Deworming in the counties.

The Ministry of Education has conducted 3 rounds of MDA of Mebendazole within Polio and measles vaccination campaigns in partnership with UNICEF and WHO. Through partnership with Ministry of Education, the school deworming programme has dewormed 236,068 children in primary and secondary schools in about 14 counties. This was done between 2004 and 2011 through UNICEF and World Bank support.

UNICEF, AFRICARE, PLAN-Liberia, De-worming the World Bank, West African Centre for International Parasite Control, Partnership for Child Development (PCD), have also provided support to the Ministry of Education for the school-based de-worming program. However, the collaboration and coordination need to be strengthened to ensure that no school aged child at any level of the health system is left out and de-worming of school age children are not duplicated Data collection and analysis is currently not flowing through the HMIS.

Partnerships with international NGOs, Research institutions, and UN agencies have continued to grow in the area of NTDs Prevention, Control or elimination. The Expended Special Project for Elimination of Neglected Tropical Diseases (ESPEN), Liverpool School of Tropical Medicine (LSTM), World Health Organization African Region, Effect Hope (EH), American Leprosy Mission (ALM), The Leprosy Mission Ireland (TLM-I), Medical Assistance Program International (MAP), and Liberia Country Office have provided technical assistance and funding towards the NTDs. Also, Sightsavers is one non-governmental development organization working in Liberia in collaboration with MOH and WHO to support the Onchocerciasis Control Program. It has provided technical and financial support in the area of Health Education, Sensitization, Advocacy and Mobilization (HSAM), Training of health workers and Community Directed Distributors (CDDs), monitoring and supervision.

1.3 NTD SITUATION ANALYSIS

1.3.1 EPIDEMIOLOGY AND BURDEN OF DISEASE

The Neglected tropical diseases (NTDs) are a diverse group of communicable diseases that prevail in tropical and subtropical conditions in 149 countries and affect more than one billion people, costing developing economies billions of dollars every year. They mainly affect populations living in poverty, without adequate sanitation and in close contact with infectious vectors and domestic animals and livestock.

In Liberia over one million people were at risk of Onchocerciasis according to Rapid Epidemiological Mapping (REMO) conducted in 1999. In 2010 to 2015, the MOH and partners with technical and financial assistance from WHO, CNTD/LSTM, AIM, effect: hope, ALM, SCI, MAP and APOC carried out mapping or assessment for most NTDs including STH, Schistosomiasis Lymphatic Filariasis, Buruli Ulcer and Leprosy with the exception of Trachoma and Yaws.

A high percentage of School age children are affected by soil-transmitted helminths (STHs) based on the result of mapping conducted in 2010 through 2015. Case management diseases, Buruli ulcer, and Leprosy have been mapped in 2012. Rabies, Yaws and complications from Lymphatic Filariasis will be mapped. Liberia was certificated Guinea Worm free but active surveillance is on-going.

The distribution of some of these endemic NTDs in the country from conducted studies, showing location/study site, prevalence, methods used, year of data collection and reference is presented as tables in the Annex.

1.3.1.1 Prevalence and distribution of Onchocerciasis

Onchocerciasis in Liberia was first diagnosed by the Harvard expedition to Africa in 1926 – 1927 and studies show that Onchocerciasis disease was found to be more prevalent in the interior than the coastal parts of Liberia. *Simulium yahense* was identified as the *Simulium* species responsible for the transmission of onchocerciasis in Harbel, Firestone rubber plantation, Liberia. According to a study conducted in the Rubber plantation, transmission of onchocerciasis in the area peaked in the dry season with a mean annual transmission potential estimated at 1,425 infective larvae per person.

Though onchocerciasis in Liberia is believed to be the forest type, significant ocular onchocerciasis and blindness rate of 1.2% was reported from the Bong Range. Rapid Epidemiological Mapping of Onchocerciasis (REMO) conducted in 1999 estimated that the disease affects all 15 counties with an estimated 1,113,213 population at risk.

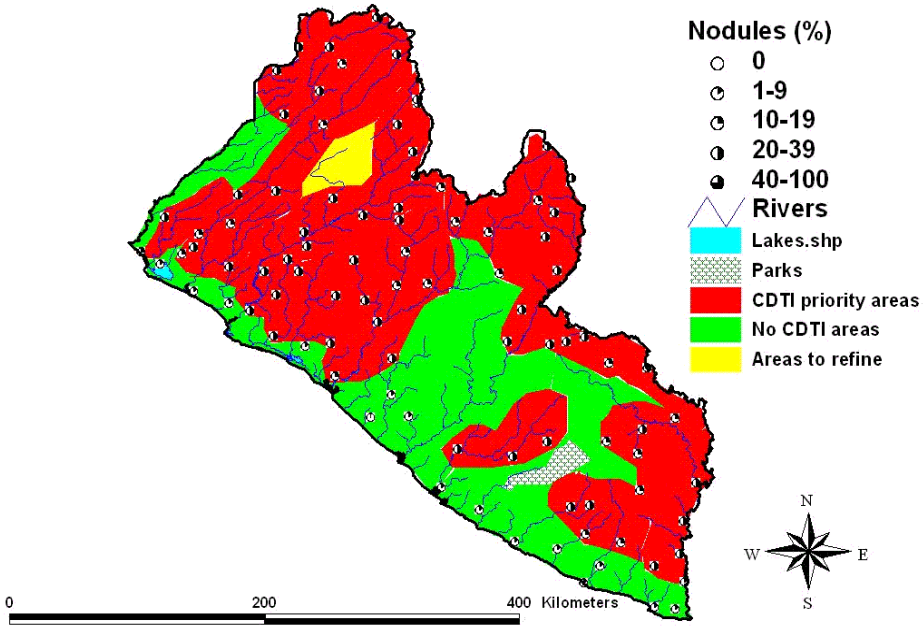


Figure 8: REMO map showing the distribution of Onchocerciasis in Liberia

Following the 1999 REMO, The African Programme for Onchocerciasis Control (APOC) in collaboration with Sightsavers supported three Community Directed treatment with Ivermectin (CDTI)) projects in Liberia. The North West, South West and South East CDTI Projects. First Project in North West was approved for five years' funding by APOC from Decemeber 1999 to November 2004 for four counties of Lofa, Bong, Nimba and Montserrado, and two more Projects South West and South East CDTI Projects were approved in 2002.

The civil war of 1990 - 2003 adversely affected the implementaion of CDTI in Liberia. Over the years since 2006, it fluctuated between 65% and 70% therapeutic coverage. Since 2010, there has been a remarkable increase in the therapeutic coverage from 81.7% - 83% and Geographic coverge from 97% - 99% . However, an epidemiological Evaluation for the Northwest CDTI project was conductd in 2012 which results show a

decrease in the prevelance rate of Onchocerciasis from 22.58 % -6.85% after ten years of treatment in this project area.

The challenges faced in CDTI implememtaion in Liberia included inaccessible roads and far flung communities as well as inadequate supervision and mobilization of affected communities by frontline health workers. In many of the communities the traditional authorities such as town chiefs have joined the CDDs to distribute Mectizan to all that need it. Nearly all CDDs interviewed renewed commitment to continue serving their people despite the odds. Some CDDs have been distributing Mectizan for over ten years.

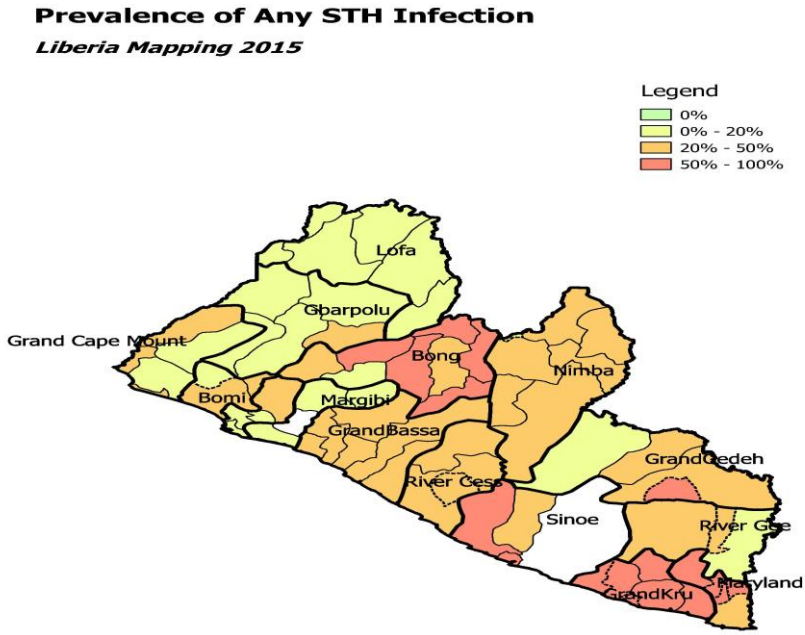
Already, the same CDDs of Onchocerciasis delivered bed nets, Vitamin A, and immunizations very commonly, and provided many other services, too, such as family planning interventions ORS and zinc. The CDTI structures in the community would be an opportunity for LF and other NTDs to tag on. There is need for a national consistent strategy of engaging with communities. In Liberia the key factors hindering CDDs performance are program related. Inadequate supervisory visits and training of CDDs by health facility staff accounted for most of the performance gaps that had adverse impact on CDDs performance. Almost every CDD interviewed requested for more training. We anticipate that lack of funding and incentives are an ongoing challenge for CDDs.

One of the major challenges was the outbreak of the deadly Ebola Virus Disease in Liberia which led to the disruption of integrated Mass Drug Administration with Ivermectin and Albendazole for Onchocerciasis and Lymphatic Filariasis.

1.3.1.2 Prevalence and Distribution of Soil transmitted Helminths

Studies on the epidemiology mapping of Soil Transmitted Helminths and Schistosomiasis were conducted across the fifteen counties by the end of 2015by the end of with support from the Centre for Neglected Tropical Diseases (LSTM), Schistosomiasis Control Initiative (SCI), WHO, in collaboration with the Ministry of Health. The results of these studies indicated that Soil Transmitted Helminths (STH) are prevalent in all fifteen 15) counties of Bong (47.75%), Nimba (27.68), Lofa (15.51%%), Grand Bassa (36.88%), Rivercess (36.08%), Gbarpolu (18.13%), Grand Gedeh (17.02%), Bomi (28.5%), Margibi (10.38%%) and Rivergee (41.91%),. Grand Kru (89.2%, Maryland (66.25%), Sinoe (56.71%), Montserrado

(17.88%), and Grand Cape Mount (20.41%).



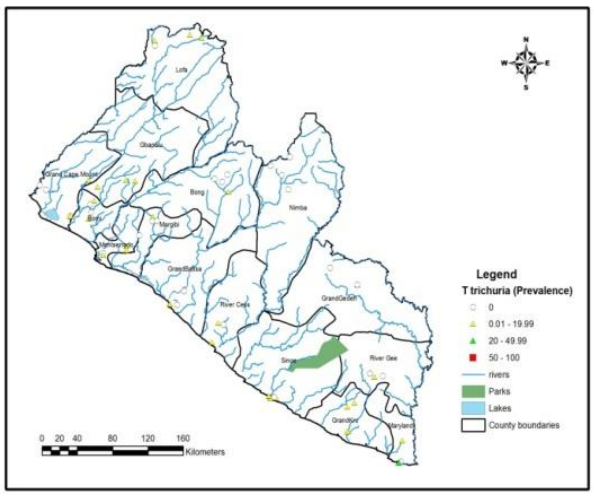


Figure 12:Trichuria prevalence & Distribution

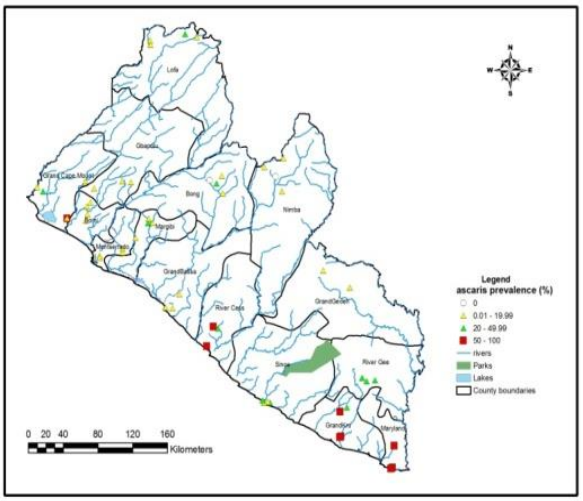
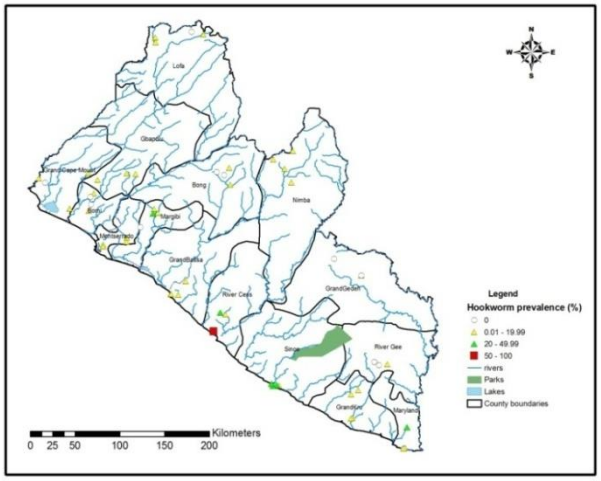


Figure 13: Ascaris prevalence & Distribution



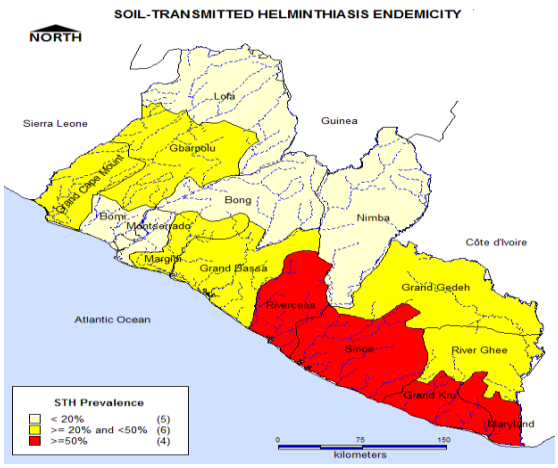


Figure 14: Hookworm prevalence & Distribution **Figure 15: STH prevalence & Distribution**

The specific Soil Transmitted Helminths (STHs), namely *Ascaris lumbricoides*, *Trichuris trichiura* and hookworms are widely distributed in Liberia and prevalent in all the 15 counties. The highest prevalence of 50 – 100% is found in most of the south eastern counties (Maryland, Grand Kru, Sinoe and Rivercess); the counties in the central part of the country show moderate prevalence of 20 – 50%. The lowest prevalence of 0.1 – 20% is found in the northern counties including Lofa, Bong, Gbarpolu, Bomi, Montserrado and Nimba.

From result of recent STH mapping surveys in 59 sampled schools in which a total of 3,144 children were examined, prevalence of Ascaris was 20%, Hookworm 9% and Trichuris trichiura 3%. STH mapping was conducted in all Counties.

1.3.1.4 Prevalence and Distribution of Schistosomiasis

Data on current status of Schistosomiasis in Liberia is derived from result of the recent integrated mapping surveys for Soil Transmitted Helminths and Schistosomiasis using the Kato-Katz Technique. The results indicate that Schistosomiasis is prevalent in Bong County at 63% for *Schistosoma mansoni* and 56% for *S. haematobium*; In Nimba County the prevalence was 38% for *S. mansoni* and 20% for *S.* haematobium; in Lofa county, 32% for *S. mansoni* and 10% for *S. haematobium* while Margibi had lower prevalence of 9% and 7% for *S. mansoni* and *S. haematobium* respectively.

The remaining counties had Schistomiasis prevalence of 0-3%. Among age groups, the distribution of Schistosomiasis was 11.6% and 11.2% for *S. haematobium* and S*. mansoni* respectively in 5- 8 years. Age group 9 – 12 years had the highest prevalence of 58% for *S. haematobium* and 57% for *S. mansoni*; age group 13 – 15 years followed with prevalence of 28.2% and 30.6% for *S. haematobium* and *S. mansoni* respectively; while age group >15years had the least prevalence of 2.2% for *S. haematobium* and 1.2% for *S. mansoni*. (See prevalence maps below).

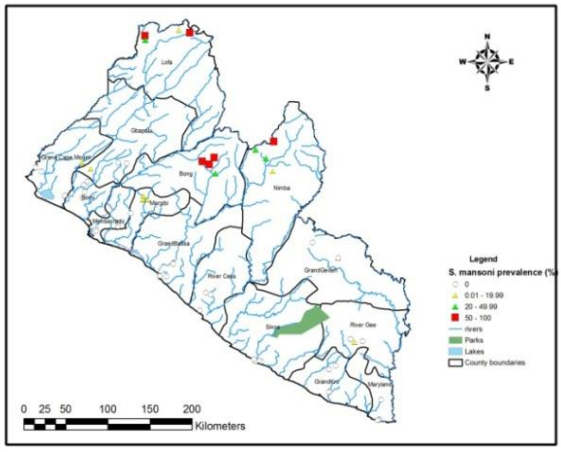


Figure 9: *S. Mansoni* prevalence & distribution

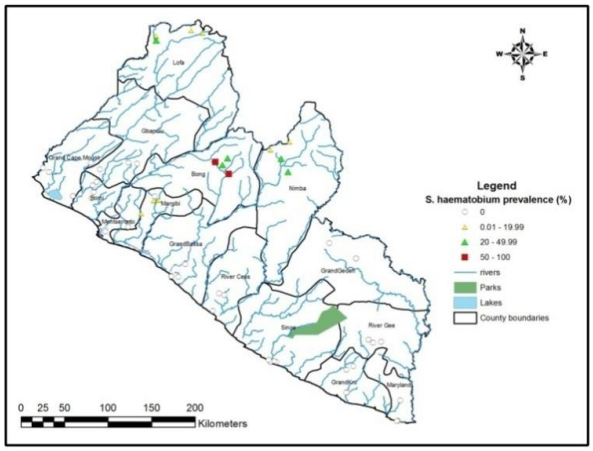


Figure 10: *S. Haematobium* prevalence & distribution

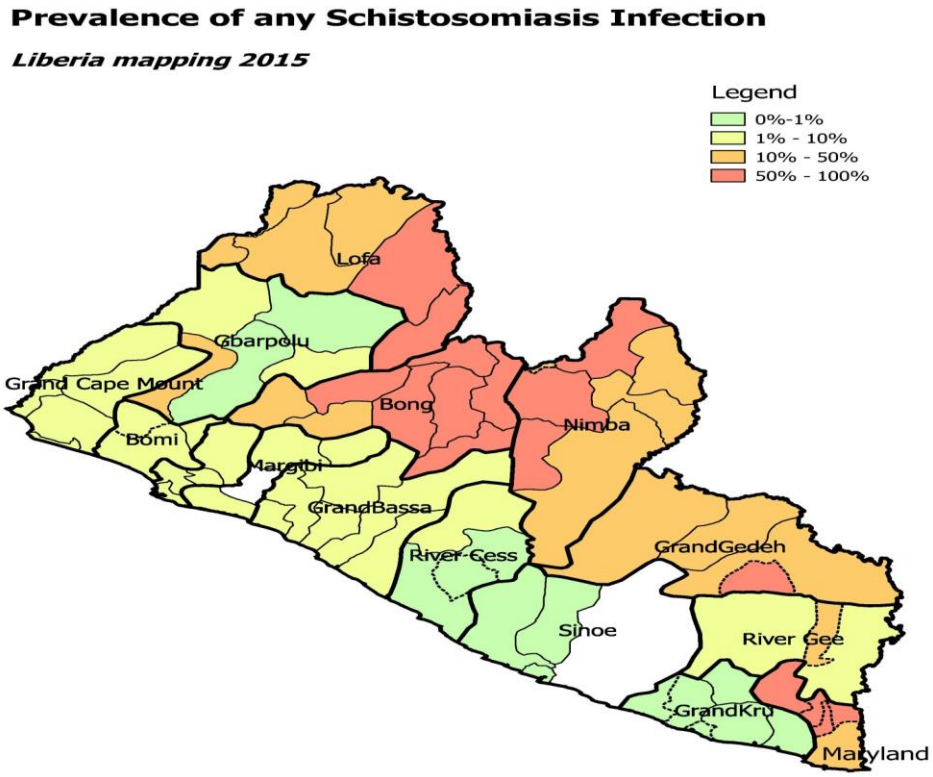


Figure 11: Schistosomiasis endemicity in Liberia

1.3.1.5 Distribution and Prevalence of Lymphatic Filariasis

Lymphatic Filariasis (LF) is a mosquito-borne NTD that is primarily characterized by acute dermatolymphangioadenitis (ADLA), hydrocele and lymphoedema. The non-fatal disease is caused by *Wuchereria bancrofti*, *Brugia malayi* and *Brugia timor*. LF in Africa, is caused by the *W. bancrofti* species. LF disabling consequences, hydrocele and lymphedema, subject millions of people in tropical and subtropical countries to physical, social, and economical challenges. Globally, 1.1 billion people living within 55 countries are at risk of contracting LF. Africa alone accounts for 34 countries, including Liberia (WB 2015).

A nationwide LF mapping exercise was conducted in 2010 using Immuno-Chromatic Test (ICT) cards on individuals aged 15 years and above. The results of LF ICT test confirmed the endemicity of LF in 13 out of 15 counties in Liberia, with the exceptions of Gbarpolu and Bomi. Generally, the highest prevalence of infection (>10% by ICT) is manifested in the Southeast counties (Grand Bassa, Sinoe, Grand Kru and Maryland). Moderate prevalence of

1 – 10% was shown in all other parts of the country except Bomi and Gbarpolu which seemed free of LF infection.

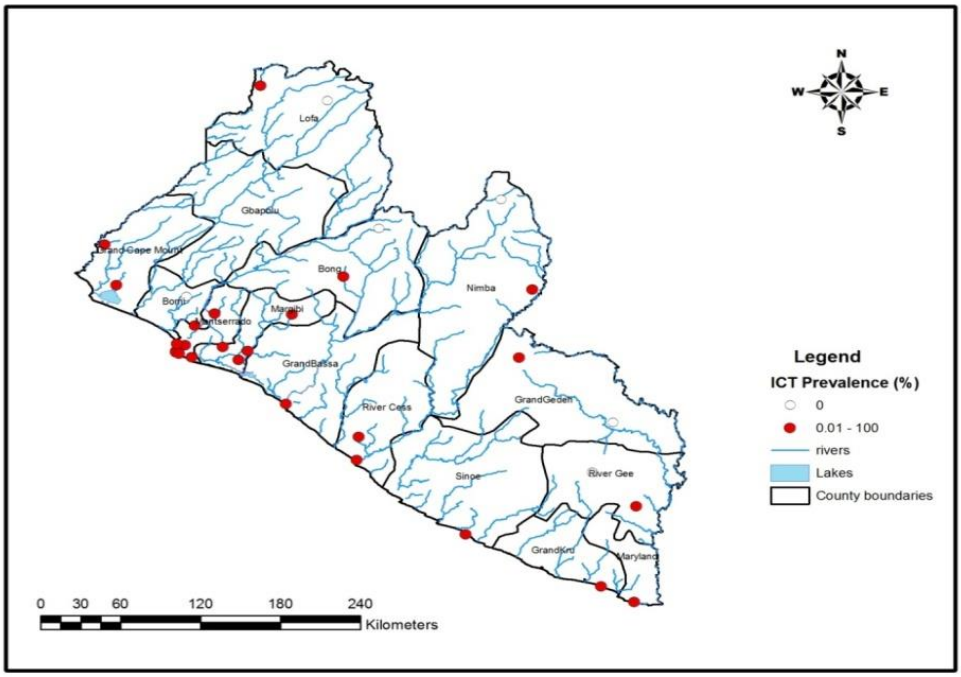


Figure 16: Prevalence & Distribution of LF

Mass Drug Administration against LF started in 2012 in which 80% therapeutic coverage was attained across the thirteen endemic counties.

During the MDA activities implementation, Community Directed Distributors were trained to identify scrotal swelling and lymphedema cases in the communities. As depicted by the table 4 below, CDDs identified 258 cases of lymphedema and 268 cases of hydrocele in six counties. In subsequent treatment years, lymphedema cases and scrotal swelling cases were reported in counties that were silent in 2012. The initial silence of these counties indicates the need to conduct a nation-wide assessment and verification exercise for lymphedema and scrotal swelling.

Table: 4 Total case of potential Lymphatic Filariasis associated morbidity detect by CDDs in 2012

County	Lymphedema cases	Scrotal Swelling cases
Bong	0	0
Grand Bassa	0	0
Grand Cape Mount	0	0
Grand Gedeh	2	2
Grand Kru	0	0
Lofa	41	17
Margibi	12	7

Maryland	196	227
Montserrado	0	0
Nimba	1	2
River Gee	0	0
Rivercess	6	13
Sinoe	0	0
Total	258	268

1.3.1.6 Distribution and Prevalence of Leprosy

Leprosy, also known as Hansen's disease, is a Mycobacterium causing disease that dominantly affects its victims' skins, peripheral nerves, upper respiratory tracts, eyes, and nasal mucosa. This chronic infectious disease leads to social stigma and long term sufferings. For more than half a century, Leprosy has remained a major public health problem in Liberia.

Liberia is one of few countries still presenting a high leprosy burden. In 2011, the prevalence rate of leprosy in Liberia (based on desk review) stood at 1.7/10,000 population. In 2015, World Health Organization led a Buruli Ulcer follow-up and Leprosy Register Review. Leprosy cases were reported in all 15 counties. The national prevalence was found to be 0.82 per 10,000 population; however, 5 counties exceeded the threshold of 1.0/10,000popn; namely Maryland (1.08), Grand Gedeh (1.10), Nimba (3.40), Grand Kru (3.47) and Grand Gedeh (3.79).

Table 6: situation of leprosy in Liberia at the end of 2015[5]

County	2015 Population	Health Facility	Registered cases before ULR	Cured	Mis-diagnosed	Other withdrawal	New case during ULR	Registered cases after ULR	Prevalence rate per 10000
Bomi	94,882	15	0	0	0	0	4	4	0.42
Gbarpolu	96,874	8	0	0	0	0	1	1	0.10
Grand Cape Mount	149,264	9	2	0	0	0	3	5	0.33
Grand Bassa	260,047	2	7	0	0	0	1	8	0.31
Margibi	230,959	7	0	0	0	0	2	2	0.09
Montserrado	1,324,073	3	45	1	0	8	0	36	0.27
Bong	380,425	3	4	0	0	0	0	4	0.11

[5] Report of the updating of leprosy registers and follow-up of the Buruli ulcer assessment of July 2013 in Liberia, November 2015.

Lofa	312,412	1	0	0	0	0	0	0	0.00
Nimba	541,387	5	184	0	0	0	0	184	3.40
Grand Gedeh	145,899	6	21	1	2	3	1	16	1.10
Rivercess	76,175	6	0	0	0	0	0	0	0.00
Sinoe	121,364	6	1	0	0	0	0	1	0.08
Grand Kru	66,048	4	70	46	0	2	3	25	3.79
Maryland	157,764	3	37	17	0	3	0	17	1.08
River Gee	77,859	4	57	25	0	5	0	27	3.47
TOTAL	**4,035,433**	**82**	**428**	**90**	**2**	**21**	**15**	**330**	**0.82**

Very few health facilities have the capacity to diagnose and manage cases, amongst which, Ganta Rehab has the best capacity and manages most of the cases. Leprosy interventions are focused mainly on high burden counties and the primary means of case detection is facility-based. With support from WHO, multi drug treatment (MDT) is provided to facilities that confirm suspected cases. Trainings in leprosy case management are rare.

The 2014 Leprosy data from Ganta Rehabilitation Centre in Nimba alone showed a prevalence ranging from 1-3/10,000 population. The child proportion was 34% (small sample size) and cases with disability grade II was 14%.

Currently the majority of leprosy cases are diagnosed and treated by the Ganta Rehab Centre in Nimba County. This centre is part of the national health system, although it is supported mainly through NGO financial and specialised support. The concentration of Leprosy services at this centre is reflected in current case register data as shown in Table 1.6, and demonstrates the lack of decentralisation of leprosy services in Liberia. There is also lack of coordination with government in some aspects of leprosy service provision that are being provided directly by NGOs. In areas where Leprosy activities are currently being implemented, implementation is done along with the TB Program activities that are primarily supported by GFATM. This has helped to ensure a limited amount of Leprosy related activities are being implemented through integration with TB.

This strategic plan, having been developed in close collaboration between the NLTCP and NTD Programs, seeks as one of its key strategic rationale, to raise the profile and programmatic support to Leprosy case management.

Table 7: Burden of Leprosy in Liberia from 2005 - 2013

YEAR	Total New Leprosy Cases	MB	PB	G2D	under 15
2005	323	104	219	0	43
2006	418	270	148	22	68
2007	410	301	109	0	45
2008	414	302	112	0	47
2009	415	307	108	6	14
2010	482	357	125	6	84
2011	662	431	231	4	95
2012	308	157	151	0	1
2013	206	129	77	0	0

The table above illustrates the trend of leprosy cases detection from 2005 to 2013.

Between 2005 and 2011, there was steady and gradual increase in the number of Leprosy cases detected; thus reflecting the period when Leprosy case management was coordinated and supervised by Liberian Practical Nurses (LPNs) in the 15 counties. In 2012, the National Leprosy and TB Control Program in collaboration with the National AIDs Control Program replaced the LPNs who were responsible for the coordination and management of both TB and Leprosy control activities with PAs and RNs to strengthen TB/HIV collaborative activities in the 15 counties.

The LPNs replaced were experienced in the field of Leprosy control and had received specialized training for Leprosy under the Leprosy Control Program of Liberia including the GLRA. The removal of the LPNs as TB & Leprosy focal persons in the counties led to the decline in the implementation of Leprosy control activities in the counties; and consequently a drop in case detection. The PAs and Nurses hired as TB/HIV Focal persons did not have the requisite knowledge to coordinate, management and supervise Leprosy control activities in the counties.

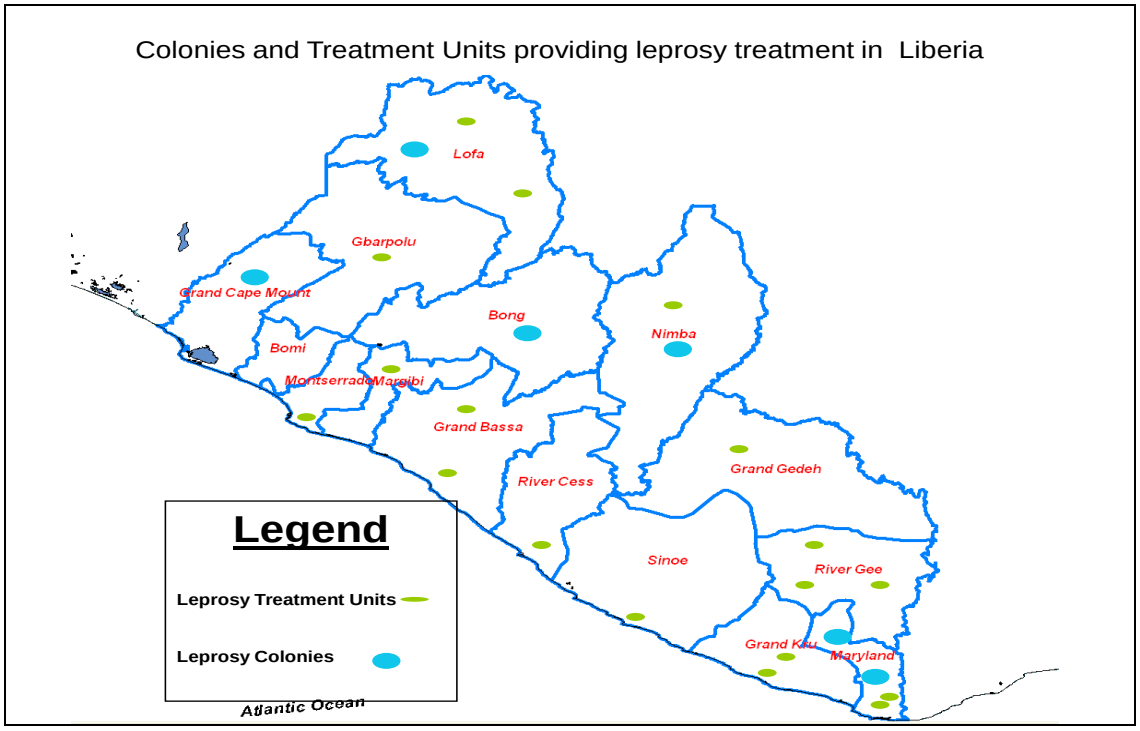


Figure 17: Map showing leprosy colonies and treatment units

1.3.1.7 Buruli Ulcer

Buruli Ulcer (BU) is a chronic debilitating infection of the skin and soft tissue that can lead to permanent disfigurement and disability. In some cases, it affects the bone, leading to osteomyelitis. Its causative agent is the *Mycobacterium ulcerans*. After Tuberculosis and Leprosy, BU is the third most common Mycobacterium disease of humans. Worldwide, BU exists in at least 33 countries with tropical and subtropical climates. Most cases occur in rural communities across sub-Saharan Africa and nearly half of the burden found in Africa is among children under the age of 15.

In Liberia, the first two cases of BU were reported in 1981 along the Manor River basin. Four other cases were reported in the same Manor River basin in 1984.

In line with WHO resolution WHA57.1 and the Cotonou Declaration, the Ministry of Health along with its partners assessed three counties (Bong, Lofa, and Nimba) and confirmed 21 cases. Those counties were declared endemic for BU in February 2012.

Following the 2012 assessment, the Ministry began implementing a 3-year pilot project in three counties, which integrated BU response into the existing health systems.

Fifteen additional cases were diagnosed through routine surveillance activities within the pilot project.

In June and July 2013, MOH along with partners assessed the remaining 12 counties and declared them BU endemic. The assessment identified 13 cases while routine activities within the pilot counties identified and managed thirty-six cases. All counties of Liberia were therefore confirmed BU endemic by the end of 2013.

In 2014, the number of new BU cases identified and managed dropped to 35 cases, due to interruptions caused by the Ebola outbreak. In 2015, 105 cases were detected; 59 of them were diagnosed and treated through routine health services. In December, the MOH along with its partners conducted a follow-up assessment of all 15 counties and confirmed an additional 46 cases, reconfirming that the disease is endemic in all 15 counties.

Table 8: Situation of Buruli ulcer in Liberia at end of 2015 from follow-up of BU assessment[6]

County	N° of Health Facilities visited during the review	Cases of BU				
		2013	2014	2015 Reg. cases before review	2015 New BU cases during review	Total 2015
Bomi	15		0	0	18	18
Bong	2	-	0	6	1	7
Cape Mont	9		0	0	8	8
Gbarpolu	8		0	0	10	10
Grand Bassa	2		0	0	0	0
Grand Gedeh	6		0	0	2	2
Grand Kru	4		0	0	2	2
Lofa	5	-	0	2	0	2
Margibi	7		0	0	1	1
Maryland	4		2	0	0	0
Montserrado	3		0	0	2	2
Nimba	3	-	0	41	0	41
River Cess	6		0	0	0	0
River Gee	4		0	0	2	2

[6] Report of the updating of leprosy registers and follow-up of the Buruli ulcer assessment of July 2013 in Liberia. November 2015.

Sinoe	**6**		**0**	**0**	**0**	**0**
LIBERIA	**59**	**72**	**2**	**49**	**46**	**95**

Buruli ulcer control activities in Liberia are being implemented mainly in three counties since 2012, and are limited to passive case detection on clinical basis and treatment with specific antibiotics.

Wound care, prevention of disability, surgery for directed wound healing (excision and skin grafting) as well as psychosocial support are limited or absent. Confirmation of cases by PCR is rudimentary and samples are sent out of the country to Ghana or Cote d'Ivoire for PCR confirmation.

Table 9: Buruli Ulcer case detection in Liberia

YEAR	TOTAL NEW CASES	CASES <15YRS		CATEGORY III LESIONS		ULCERATIVE FORM AT DIAGNOSIS		SPECIMEN TESTED BY PCR		
		N	%	n	%	n	%	Total	PCR +	% PCR+
2012	36	12	33%	36	100%	34	94%	76	21	28%
2013	35	3	9%	24	69%	32	91%	136	32	24%
2014	100	18	18%	71	71%	86	86%	Not Done	Not Done	Not Done
2015	105	*12*	11%	68	65%	101	96%	36	0	0%
TOTAL	**276**	**45**	**16%**	**199**	**72%**	**253**	**92%**	**248**	**53**	**21%**

Table 9 above show details of BU case detection in Liberia between 2012 and 2015.

Patients with Category III lesions are currently constitute more than 72% of all cases. Ulcerative forms are over 92%, PCR positive results stands at 21%, and less than 16% of cases are below the age of 15 years. The percent of cases diagnosed and healed with limitation of movement remains not established.

There is an urgent need to organise and extend Buruli ulcer control activities in Liberia. In this regard, the following recommendations should be considered:

- Integrate BU into other NTD interventions/ activities like advocacy, community mobilization and sensitization, training of health staff and community volunteers, community case finding and case management at health facilities
- Build research capacity and provide laboratory equipment to support Buruli ulcer assessment and case confirmation by PCR in Liberia.

1.3.1.8 Yaws

Yaws is a chronic and usually ulcerative bacterial infection of the skin, caused by the bacterium *Treponema pallidum pertenue*, which is closely related to the causative agent of Syphilis, *Treponema pallidum*. The disease is transmitted through non-sexual human-to-human contact. It is found among people of poor personal hygiene and socio-economic conditions, and is spread through skin to skin contact. Yaws can be found in tropical forest regions of Africa, Asia, Latin America, and the Pacific. Children below the age of 15 years account for about 75-80% of cases and they are the main reservoir of the organism (WHO, 2016b).

The resurgence of yaws in many countries of Africa and South East Asia[7] in recent years following eradication efforts in the 1970s[8], has lead the WHO to consider it in the WHO NTDs roadmap for eradication by 2020[9].

To attain the 2020 target to yaws, the WHO developed an eradication strategy in 2012, doped the "Morges Strategy"[10] . This strategy is based on two treatment policies:

i. **Total Community Treatment (TCT):** This is the implementation of two rounds of Mass Drug Administration annually to all members of all communities confirmed endemic for yaws for a period of at least three (3) years.
ii. **Total Targeted Treatment (TTT):** This happens in-between rounds of TCT, and is the treatment of all detected clinical cases of yaws and all contacts around the case.

There are four components for a successful implementation of the Yaws Eradication Strategy:

i. *Component 1:* Implementation of the new treatment policies above;
ii. *Component 2:* Strengthening of the health system and community system to implement Total Targeted Treatment (TTT);
iii. *Component 3:* Training, health education and surveillance;
iv. *Component 4:* Operational research.

[7] Mitja O. et al. Global epidemiology of yaws: a systematic review. Lancet Glob. Health 2015, 3:e324-31
[8] Asiedu K. et al. Yaws eradication: past efforts and future perspectives. Bulletin of the WHO. 2011, 86(7). http://www.who.int/bulletin/volumes/86/7/08-055608/en
[9] Accelerating work to overcome the global impact of Neglected Tropical Diseases: a roadmap for implementation. World Health Organization 2012.
[10] Eradication of yaws – The Morges Strategy. WER. 2012, 87:189-200.

The intervention tools for the Yaws eradication strategy are:

i. Azithromycin (single oral dose): preferred treatment
ii. Benzathine penicillin (injection): alternative treatment.

The unit of implementation of the Yaws Eradication Strategy is the village or community.

The criteria for treating a village or community is the confirmation of the village or community as endemic for yaws (clinically and/or serologically)

In Liberia, five cases of yaws were diagnosed in Lofa and Sinoe Counties in December 2015, by external WHO consultants during the Leprosy Register Review and BU Follow-up assessment in 2015 (WHO, 2016). They were clinically confirmed since a rapid lab test was not available and patients were put on treatment.

These findings triggered the interest of the Ministry of Health to determine the magnitude of yaws throughout Liberia, and then implement the yaws eradication strategy in endemic counties. The current NTDs Strategic plan will strive to attain the yaws eradication objective.

1.3.1.9 Co-endemicity of NTDs in Liberia

There is co-endemicity of four NTDs in 15/15 counties: STH, Onchocerciasis, leprosy and Buruli ulcer. LF is endemic in all counties except two, Gbarpolu and Bomi, which need to be re-mapped. Schistosomiasis was mapped in 15 counties and is endemic in 10/15 counties. It is not present in Montserrado, Maryland, Cape Mount, Sinoe and Grand Kru counties (new data is due for these counties following re-mapping.) Buruli ulcer and leprosy are also present in all 15 counties. For now, yaws is known to be endemic in two counties. However, the mapping of yaws within the framework of this master plan will bring precision on the situation in the remaining 13 counties where there is currently no data.

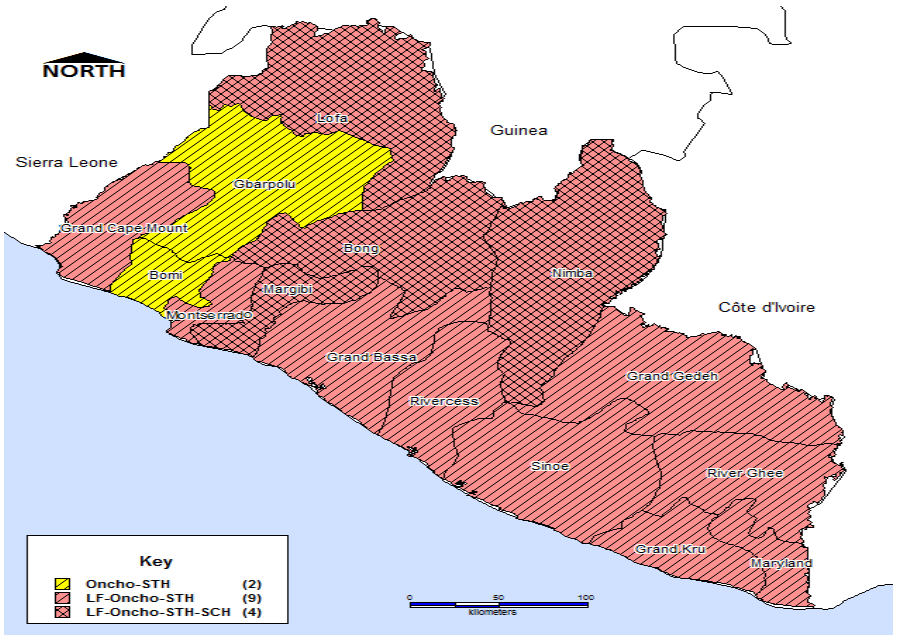


Figure 23: Map showing PCT-NTDs Co-endemicity

1.3.2 NTD Programme implementation in Liberia

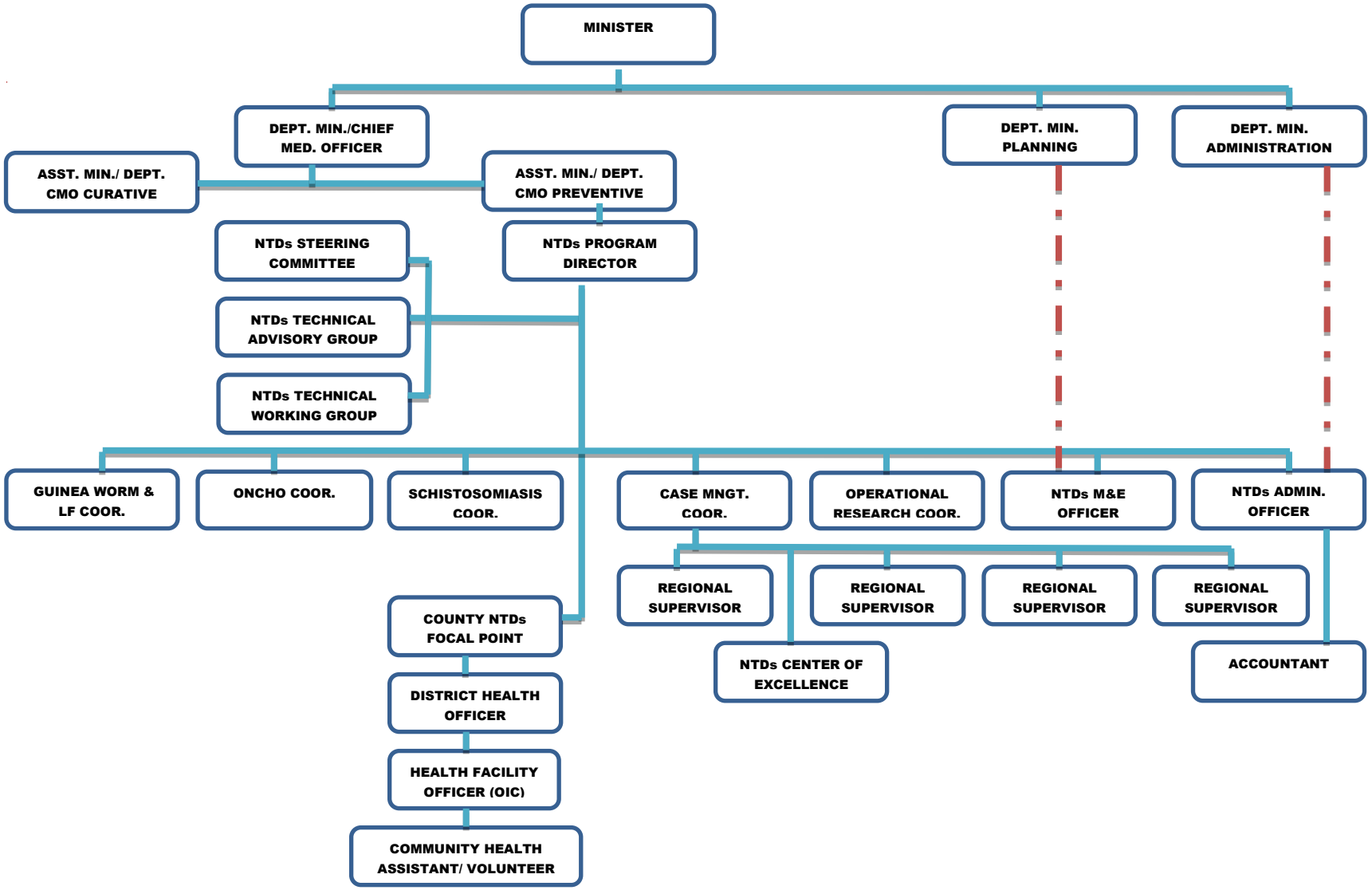
1.3.2.1 Structural organization of NTD Programme

The NTDs Programme in the ministry of health is the body responsible for the control, elimination, and eradication of all NTDs in Liberia. Within the framework of the implementation of the current NTDs Master Plan, the NTDs Programme will undergo restructuring.

The new NTDs Programme will comprise a National NTDs Steering Committee, and a Technical Working Group (TWG) at the central level.

The National NTDs Steering Committee shall be presided over by the Minister of Health, and coordinated by the Chief Medical Officer with the assistance of the Assistant Minister for Preventive Services. The National NTDs Steering Committee shall be charged with strategic and political orientation in matters of NTDs in Liberia.

The TWG which is the executive arm of the NTDs Programme shall be directly responsible to the National NTDs Steering Committee. The TWG shall be under the leadership of the National NTDs Director. The National NTDs Director shall be assisted by the various specific NTD Coordinators (see organogramme below). The TWG shall be charged with implementing and monitoring the strategic orientations charted by the National Steering Committee, and reporting regularly to it.


MINISTER
DEPT. MIN./CHIEF MED. OFFICER
DEPT. MIN. PLANNING
DEPT. MIN. ADMINISTRATION
ASST. MIN./ DEPT. CMO CURATIVE
ASST. MIN./ DEPT. CMO PREVENTIVE
NTDs STEERING COMMITTEE
NTDs PROGRAM DIRECTOR
NTDs TECHNICAL ADVISORY GROUP
NTDs TECHNICAL WORKING GROUP
GUINEA WORM & LF COOR.
ONCHO COOR.
SCHISTOSOMIASIS COOR.
CASE MNGT. COOR.
OPERATIONAL RESEARCH COOR.
NTDs M&E OFFICER
NTDs ADMIN. OFFICER
REGIONAL SUPERVISOR
REGIONAL SUPERVISOR
REGIONAL SUPERVISOR
REGIONAL SUPERVISOR
COUNTY NTDs FOCAL POINT
NTDs CENTER OF EXCELLENCE
ACCOUNTANT
DISTRICT HEALTH OFFICER
HEALTH FACILITY OFFICER (OIC)
COMMUNITY HEALTH ASSISTANT/ VOLUNTEER

The Organogram of the Liberian NTDs Programme

At the county level, the county health team under the leadership of the County Health Officer (CHO) assisted by the County NTD Focal Point shall be responsible for NTDs activities within their respective counties. They provide technical support to the health districts, health facilities and communities under their responsibility.

At the Peripheral level, the District Health Officer/Officers in Charge shall implement programme activities on the field and report to the county health teams.

1.3.2.2 Past and on-going NTD control programmes

In Liberia, the Neglected Tropical Diseases Program was established in 2011 with the development of a five-year Master plan which serves as a guide for program implementation. The development of the plan brought together participants drawn from line ministries, health and development partners, UN agencies, and university and research institutions. This improved ownership as well as creating a platform for coordination of multi-sectoral efforts in NTDs prevention, control or elimination. Since the introduction of this integrated plan which was endorsed by the Minister of Health, the program has implemented the activities along the following sequence:

- Completed mapping for most of the integrated Neglected Tropical Diseases (Schistosomiasis, Soil Transmitted Helminths, Buruli Ulcer, Onchocerciasis and Lymphatic Filariasis), three cases of Yaws were identified during the 2015 follow-up of Buruli Ulcer assessment and Leprosy register review , no yaws mapping has been conducted yet.
- Three (3) successful rounds of Mass Drug Administration for Schistosomiasis, Soil Transmitted Helminths, Onchocerciasis and Lymphatic Filariasis
- Two (2) rounds of Monitoring and Evaluation for Schistosomiasis and Soil Transmitted Helminths in Bong, Nimba and Lofa counties conducted with thirty eight (38) schools
- Epidemiological evaluation was conducted for Onchocerciasis in Bong, Lofa, Nimba, Montserrado and Gbarpolu counties in 2012.

- Data analysis and production of maps.

The outcome of these activities has been used to describe the epidemiology of NTDs in Liberia (see 1.3.1 above). Tables 10 and 11 that follow give a summary of interventions on existing NTD programmes.

Table 10: Summary of intervention information on existing PCT-NTD programmes

NTD	Date programme started	Total counties targeted	No. of counties covered (geographical coverage*)	Total population in target Counties	No. (%) Population covered	Type of Intervention	Key partners
Oncho	2000	15	11	2,987,795	1,785,305 (71%) (for 2015) MDA Data 2015	MDA	WHO/APOC, Sight savers, CHAL
LF	2012	13	10	2,787,901	1,696,195 (72% 2015) MDA Data 2015	MDA	WHO, FPSU/ LSTM
STH	2012	15	10	2,987,795)	1696195 (68%) 2015 MDA Data	MDA (School-based treatment)	WHO/APOC, MOE, SCI, Sight savers, FPSU/ LSTM
Schisto	2012	15	3	2,987,795	334,67711 % (2015) MDA Data 2015	MDA (School-based treatment)	WHO/APOC, MOE, SCI, Sight savers, FPSU/ LSTM

Table 11: Summary of intervention information on existing CM-NTD programmes

NTD	Date programme	Total confirmed	No. of counties	No. of counties	No. of patients	Key strategies	Key partners

	started	endemic counties	reporting new cases in 2015	providing patient care	treated in 2015	used	
Leprosy	1975	15	4	6	330[11]	Passive case detection, facility management	MOH, GLRA, ALM, EH, TLM, Eire
Buruli Ulcer	2012	15	4	4	105[12]	Active case detection, facility management	MOH, MAP, EH, TLM, ALM, WHO
LF Morbidity	2012	15	7	0	125[13]	Passive case detection, home-based	WHO, FPSU/LSTM
Yaws	Not Started	2	2[12]	0	5[12]	Active Case detection, health facility management	

1.3.3 Gaps and Priorities

From the analysis of the country profile, the health system and the NTDs programme, the following SWOT analysis is made to spell the strengths, identify the weaknesses and threats and sort out potential means of addressing them in order to ensure a successful planning and implementation of the NTDs Master plan.

Table 7: SWOT analysis of NTD programme implementation

Strengths	Weaknesses/ Gaps	Strengths that can Offset weaknesses
▯ High level of commitment for NTDs Control	▯ Integrated NTDs Control is in the setup phase, policy & guidelines, Program management / coordination structures and HR systems are yet to be developed	▯ Mobilize resources from existing partners (WHO, CNTD/LSTM & Sightsavers, effect: hope) to develop and disseminate policy and guidelines, conduct institutional, technical and formative assessment and develop NTDs' Monitoring and evaluation plan)

[11] WHO Follow-up BU assessment and Leprosy Register Review, November 2015
[12] The Annual Report 2015, BU Programme, Ministry of Health, Liberia
[13] MDA Report 2015, Oncho/LF Programme, Ministry of Health, Liberia

Political will of Government to support health programs	Stretched and limited financial resources	Use NTDs Master plan as a tool to mobilise additional funds to close resource gaps due to limited funds.
Existing physical facilities	Failure to fulfil formal commitments made by government.	Foster inter-sectoral collaboration with line ministries
Political stability of country	Low community involvement/participation in health care delivery programs	Liaise with existing community radios to carryout communication and advocacy programs to promote community participation.
Existing networking and partnership with government agencies, UN and INGOs	Institutional, technical and formative capacity to implement integrated NTDs control not fully assessed.	Collaboration will be established with research institutions at home and abroad to build capacity of NTDs managers to coordinate and conduct operational research to improve NTDs programming
Availability of National NTDs multi-year plan that can be used for resource mobilization	Lack of ownership of existing programs at national and county levels	
Availability of CDI structures at Community level.	Monitoring and Evaluation plan including management information systems for integrated NTDs not fully developed	
Commitment of partner(s) to provide PCT and MDT as long as required	Lack of a communication and advocacy plan for integrated NTDs	
Available Community Health Services policy	Lack of incentives for staff at all levels as compared to other programs	
Government decentralization policy	NTDs drugs not fully on MOH procurement plan and essential drug list	
Baseline data and	Lack of effective	

experience from 2012-2015 NTDs Program Inclusion of NTDs into the National Health Plan and Policy and Essential Packages for Health Services (EPHS) • Willingness and acceptance of CDI Projects by the communities • Network of CDDs - over 10,000 trained across all counties participating in other health care interventions e.g. ITN distribution, NIDs, social mobilization, contact tracing, health education and member of burial teams in the various counties during the EVD outbreak. • Inter-sectoral collaboration (MOH and Education) in implementing MDA	synergy with other sectors (educational , faith-based and development institutions) operating at the community level limited operational research activities High turnover of trained professional staff Insufficient health professionals in the health services especially at county and facility levels	
Opportunities	**Threats**	**Opportunities that can offset threats**
Multiple partnership with WHO, CNTD/Liverpool, Sightsavers MOE/MOA and other public and private organizations Opportunities at	Poverty and lack of health knowledge in general population Use of external cash	Advocate for school feeding with WFP Collaborate with

international level in funding NTDs	incentives by some programs to motivate volunteers at community level	development NGOs and Agriculture Ministry to involve CDDs in income generating activities
Presence of local radio stations in all 15 Counties	Deplorable road conditions	Liaise with other Programs to influence national policy to harmonize incentives
Presence of general Community Health Volunteers in all counties	Political instability in neighbouring countries	Low community participation will be improved with proper collaboration with community radios in implementing NTDs communication and advocacy plan.
Availability of paramedical institutions in all Regions of the country	Impact of EVD on community confidence and involvement in the health system	Strengthen social mobilization efforts on health education program
	Resistance by some pupils to taking Praziquantel on empty stomach during MDA	Include NTDs training curriculum in relevant health and educational institutions
		Deployment and remuneration packages shall be established by the Ministry of Health that increase motivation and the retention of skilled service providers in rural areas

PART 2: STRATEGIC AGENDA FOR NTDs IN LIBERIA

2.1 OVERALL NTD PROGRAMME MISSION AND GOALS

2.1.1 Mission:

Provide quality services for NTDs prevention and control or elimination to the population of Liberia in line with the Ministry of Health Policy Plan and the Sustainable Development Goals.

2.1.2 Vision:

A Liberia free of NTDs for better health, education and economic growth.

2.1.3 Goal:

To reduce the burden of targeted NTDs to a level that is no longer a public health problem through an integrated control programme, contributing to the socio-economic development of Liberia.

2.2 GUIDING PRINCIPLES AND STRATEGIC PRIORITIES

2.2.1 Guiding Principles

2.2.1.1 Government Ownership and Partners Alignment

The primary responsibility for NTDs control, elimination or eradication in Liberia is the responsibility of the Government. There is a need for different approaches and increased collaboration at the national, county and health district levels within the country.

A range of government departments and agencies will be responsible for NTDs activities, and actions shall be coordinated and harmonized. The Government shall act through partnerships with international agencies including WHO, private sector institutions, NGOs, CBOs, and as well as people affected by NTDs. The collaboration will result in support of the sustainability of expertise, resource mobilization and institutional development, stigma reduction, research and community based rehabilitation. When needed, cross-border actions shall be undertaken in coordination with other governments to ensure continuum of care for patients.

As a matter of Government Policy, **t**he NTDs Master Plan will be Government-led and implemented within the framework of the: Agenda for Transformation (AfT), National Health Policy and plan and Sustainable Development Goals (SDGs). Furthermore, the NTDs Master Plan will be implemented in line with the principles of coordination, monitoring and evaluation mechanisms across the country

2.2.1.2 SUSTAINING EXPERTISE IN NTDS

In order to sustain expertise, there shall be a focus on upgrading and strengthening the Leprosy Rehabilitation Centre at Ganta, to serve as the national centre of excellence for NTDs.

Its missions shall consist of laboratory confirmation of cases, management of complications, capacity building, and research. New tools utilizing e-learning and tele-medicine, wherever available, will be exploited. Nursing and medical schools' curricula as well as education curricula for low-level health workers shall include NTDs to generate a minimum suspicion among health care workers, inclusive of those working in low endemic areas. Former patients and their family members could be represented as resource persons to sustain knowledge about these diseases.

2.2.1.3 QUALITY NTDS SERVICES

Evidence based: The NTDs interventions will be evidence-driven and guided by research findings. The Integrated NTDs programme shall take into considerations the successes and positive initiatives of the previous individual vertical NTDs programmes, and evolve progressively towards total integration and ensure the collection of evidence and learning throughout the implementation of the NTD Program.

Gender: The implementation of the NTDs Master Plan will be gender-sensitive and responsive. Special attention shall be given to children and women, promoting early detection through periodical screening, facilitating diagnosis and access to care.

Human Rights: The Liberia NTDs Master Plan implementation will respect fundamental human rights, and adhere to high ethical standards.

2.2.1.4 EMPOWERMENT OF COMMUNITIES

Persons affected by these diseases can be incentivized to support early identifications of other patients, and to improve treatment adherence and completion rates. National and community based organizations representing persons affected by NTDs shall be integral to this process.

Given that most of NTDs interventions are community-based, community leaders will be fully mobilized and empowered to take full responsibility for the NTDs activities in terms of planning and implementation in their communities.

2.2.1.5 Governance:

The implementation of the NTDs Master Plan at all levels will be driven by the principles of good governance, transparency, accountability and prudent use of resources.

2.2.1.6 Local Realities:

While the NTDs Master Plan meets global goals and standards of best practices, interventions will be designed and implemented to fall within and be aligned to the context of the country's realities, priorities, traditions and socio-cultural environment.

2.2.1.7 Institutional framework for planning, implementation and evaluation of NTDs programme:

This shall be as much as possible follow a bottom-top approach, in order to enhance ownership and sustainability of NTDs Programme at all levels.

2.2.2 Strategic Priorities

Strategic Priority (SP)	Strategic Objectives (SO)
SP-1: Strengthen government ownership, advocacy, coordination and partnerships	SO1.1: Strengthen coordination mechanism for the NTDs control program at the central, county, district and community levels.
	SO1.2: Strengthening coordination mechanism for NTDs control programs at community levels
	SO1.3: Strengthening coordination amongst the line ministries of Health, Education, Ministry of Gender, Ministry of Internal Affairs, MOA, MPW,
	SO1.4: Strengthen and foster partnership for the control, elimination and eradication of NTDs at central, county, district and community levels as well as international levels
	SO1.5: Ensure high level review of NTDs program performance and the use of lessons learnt to enhance advocacy, awareness and effective implementation
	SO1.6: Strengthen advocacy, visibility and profile of NTDs interventions that will lead to control, eliminating and eradication at all levels
SP2 : Enhance resource mobilization and Planning for results in NTDs control	SO2.1: Ensure development and update of NTDs guidelines, policies and tools
	SO2.2: Increase community participation in NTD planning and resource mobilization, Civil society
	SO2.3: Enhance resource mobilization approaches and strategies for NTDs intervention
	SO2.4: Conduct high-level advocacy for the NTD program with Government of Liberia to secure additional funding support
	SO2.5: Strengthen the integration and linkages of NTDs program and financial plans into sector wide and national budgetary and financing mechanism
	SO2.6: Develop integrated multi-year plans and gender-sensitive annual operational plans for the control, elimination and eradication of targeted NTDs

STRATEGIC PRIORITIES3: Scale-up access to interventions, Treatment & System Capacity Building	SO3.1: Increase community access to NTDs programs
	SO3.2: Ensure integration and/or co-implementation of intervention package for NTDs
	SO3.3: Establish referral centre for NTDs (Leprosy, Buruli Ulcer, etc)
	SO3.4: Train local clinicians to specialize in NTDs case management
	SO3.5: Ensure establishment of treatment mechanism for morbidity-related NTDs
	SO3.6: Ensure establishment of Integrated Vector Management (IVM) as part of the control for targeted NTDs
	SO3.7: Strengthen capacity at central, county , district and community levels for NTDs programme management and implementation
SP4: Enhance Monitoring, Supervision, Surveillance and Operations Research	SO4.1 Improve monitoring and supervision tools to reflect NTDs indicators
	SO4.2 Strengthen surveillance activities at all levels of NTDs
	SO4.3: Develop and promote integrated NTDs framework and improve monitoring of NTDs within the context of National Health Information System.
	SO4.4: Establish a mechanism for information sharing to support decision making
	SO4.5: Strengthen the response and control of epidemic-prone NTDs
	SO4.6: Improve operational research, documentation and evidence to guide innovative approaches to NTDs programme interventions
	SO4.7: Establish integrated data management systems and strengthen supervision of NTDs program
	SO4.8: Integrate NTDs into the national pharmaco-vigilance system.

2.3 National NTDs programme goals, objectives, strategies and target populations

The national NTDs programme goals for NTDs specific diseases are in line with the global goals and the WHO 2020 roadmap targets. Table 13 give details of the goals, objectives, key interventions the delivery channels and the target population for the interventions.

Table 13: Summary of NTD disease specific goals and objectives

NTD PROGRAMME AND GLOBAL GOAL	NATIONAL GOALS	OBJECTIVES	INTERVENTIONS	DELIVERY CHANNELS	TARGET POPULATION
Lymphatic Filariasis Elimination **Goal:** Elimination of Lymphatic Filariasis as a global public health problem by 2020.	Elimination of Lymphatic Filariasis as a national public health problem by 2020.	1. To achieve 100% geographical and 80% therapeutic MDA coverage by 2018 2. To interrupt transmission by 2018 3. To reduce the morbidity and disability due to LF by 80% by 2020	• Annual MDA of Ivermectin and Albendazole for 5 years • Vector control within Malaria Control Program • Disability management and prevention: morbidity management for lymphodema, Hydrocelectomy and hydrocele	• Community-based campaigns; Community Directed Intervention (CDI) • Indoor Residual Spray, bed net distribution • Health facility-based, Home-based care	All communities in endemic counties
Onchocerciasis control **Goal:** To control and eliminate Onchocerciasis, where feasible with CDI and other effective	To control Onchocerciasis as a national public health and socio-economic problem in Liberia by 2020	1. To achieve 100% geographical MDA coverage by 2018 2. To conduct	• Mass Drug Administration (MDA) • Epidemiological and entomological evaluations	• Community Directed Treatment with Ivermectin (CDTI) : • Epidemiological and entomological	5 years and above excluding pregnant women, lactating mothers less than 7 days and very sick persons

NTD PROGRAMME AND GLOBAL GOAL	NATIONAL GOALS	OBJECTIVES	INTERVENTIONS	DELIVERY CHANNELS	TARGET POPULATION
interventions by 2025		epidemiological and Entomological evaluation in sentinel communities by 2018 3. To achieve at least 80% therapeutic coverage in all endemic communities annually		evaluations in sentinel sites	
Soil Transmitted Helminths Control **Goal:** To treat at least 75% of all school age children at risk of STH	• To achieve 85% therapeutic coverage in school age children. • To treat 100% of STH cases in health facilities	1. Cover 100% of all schools in endemic communities with MDA. 2. Treat at least 85% school age children between 5-14 years and the	MDA	• School based de-worming, • Community health volunteers and health facilities	MDA in 15 counties with prevalence over 20%

NTD PROGRAMME AND GLOBAL GOAL	NATIONAL GOALS	OBJECTIVES	INTERVENTIONS	DELIVERY CHANNELS	TARGET POPULATION
		affected population.			
Schistosomiasis control **Goal:** To treat at least 75% of all school age children at risk of Schistosomiasis	• To treat 100% of schools in endemic communities • To achieve 75% therapeutic coverage in school age children.	1. To treat at least 100% of Schistosomiasis cases in health facilities 2. Treat at least 75% of school age children between 5-14 years and the affected population.	• Appropriate treatment of Schistosomiasis cases at health facility (for areas with less than 20% prevalence) • Mass drugs distribution in hyper and meso endemic communities. • Conduct impact evaluation at sentinel sites annually after MDA	• Communities and school-based programs through churches, markets, mosque etc. • Use of CDI structures • Increased awareness through radio, and other media (drama, cultural performances, town criers and youth organizations) • M&E at Sentinel sites	All school age children between 5-14 years and the affected population.

NTD PROGRAMME AND GLOBAL GOAL	NATIONAL GOALS	OBJECTIVES	INTERVENTIONS	DELIVERY CHANNELS	TARGET POPULATION
Leprosy **Goal:** Early diagnosis and treatment with MDT, elimination of leprosy as a public health problem at national, and then elimination at sub-national levels	• Reduce grade 2 disability (G2D) rate among new leprosy cases to less than one case • per 1,000,000 inhabitants • Achieve zero case with grade 2 disability in children with leprosy • Achieve a cure rate among new PB and MB leprosy patients of at least 90% • Achieve a prevalence rate of less than 1 case per 10,000 inhabitants in all	1. To increase access to quality diagnosis and case management of leprosy, including provision of free cost for MDT for all affected Patients by 2020. 2. To improve the diagnosis and management of complications of Leprosy 3. To increase the level of awareness in the community aimed at promoting self-reporting by 50% in 2020.	• Early case detection and treatment with MDT • Prevention and management of disabilities • Advocacy and awareness by persons affected with the disease	• Health facility and community based intervention • Increased awareness through health education, sensitization in all communities with affected populations	All endemic communities

NTD PROGRAMME AND GLOBAL GOAL	NATIONAL GOALS	OBJECTIVES	INTERVENTIONS	DELIVERY CHANNELS	TARGET POPULATION
	counties				
Buruli Ulcer **Goal:** Early detection and early treatment of 70% of cases in all endemic communities	• Detect 70% of cases in all endemic counties • Confirm at least 70% new clinically suspected BU cases by PCR • Achieve below 60% of BU cases with ulcerative lesions at diagnosis • Achieve below 25% of category III BU lesions at diagnosis • Achieve below 15% of BU cases with limitation of movement at	1. To increase access to quality diagnosis and case management of Buruli Ulcer, including provision of free treatment for all affected patients by 2020 2. To improve the prevention and management of complications of Buruli Ulcer	• Early case detection and treatment. • Prevention and management of disabilities. • Surgical interventions to correct deformity. • In-country case confirmation • Community awareness and sensitization.	• Community based • Health facility based	All communities in endemic counties

NTD PROGRAMME AND GLOBAL GOAL	NATIONAL GOALS	OBJECTIVES	INTERVENTIONS	DELIVERY CHANNELS	TARGET POPULATION
	diagnosis				
Yaws **Goal: Eradicate yaws by 2020**	Eradication yaws in Liberia by 2020	• Determine endemicity of yaws in all counties in Liberia • Achieve zero new clinical case of yaws in all endemic communities by 2020	• National prevalence survey • Implementation of the WHO Yaws eradication strategy (Total community treatment and Total targeted treatment) in all endemic counties	• Community based MDA with Azithromycin • Treatment of clinical cases and their contacts in-between MDA rounds	Endemic communities

2.4 National NTDs milestones

Table14: Milestones for PCT-NTDs

Objective	Indicator	Baseline (2015)	2016	2017	2018	2019	2020
LYMPHATIC FILARIAISIS							
Completed mapping of LF in all counties	Number of counties mapped for LF	15	15	15	15	15	15
determined LF endemic counties and the population at risk	Number of LF endemic counties	13	13	13	13	13	13
implementation of LF MDA in endemic and co-endemic counties	Number of endemic counties implementing LF MDA	10	13	13	13	13	13
Achieve100% geographical coverage in LF endemic counties annually	Geographic coverage of LF MDA in %	77%	100%	100%	100%	100%	100%
Conduct more than 5 rounds of MDA in all endemic IUs with counties coverage more than 65 % and stopped MDA in at least 50% of LF endemic IUs under WHO criteria	Proportion of target population for LF MDA treated	72%	75%	80%	82%	83.50%	85%
Conduct first TAS activities in LF endemic IUs after at least 5 rounds of MDA	Proportion of LF MDA IU benefiting 1st TAS	0%	0%	54%	46%	0%	0%
Conduct second TAS in LF endemic IUs	Proportion of LF MDA IU benefiting 2nd TAS	0%	0%	0%	54%	46%	0%
Provide hydrocele surgery to 100% of detected cases	Proportion of detected cases of hydrocele benefiting from surgery.	0%	0%	0%	25%	50%	100%
ONCHOCERCIAISIS							

Objective	Indicator	Baseline (2015)	2016	2017	2018	2019	2020
Complete mapping/delineation of oncho and determined oncho endemic areas and the population at risk	Number of counties mapped for Oncho	15	15	15	15	15	15
implementation of oncho MDA in counties requiring MDA	Number of endemic counties implementing Ivermectin distribution	15	15	15	15	15	15
achieve100% geographical coverage in Oncho endemic counties	Proportion of endemic counties covered for MDA	73%	100%	100%	100%	100%	100%
Achieve therapeutic coverage of at least 80% annually in all endemic counties	Proportion of eligible population for oncho MDA treated	63%	75%	80%	82%	84%	85%
Conduct Phase 1a Epidemiological evaluation activities in 100% of oncho endemic IUs after at least 10 rounds of MDA	Proportion of oncho MDA IU benefiting phase 1a epidemiological assessment	33%	0%	50%	50%	0%	0%
Conduct and Pass epidemiological and entomological assessment in 100% of IUs	Proportion of oncho MDA IU benefiting epidemiological & entomological assessment	0%	0%	0%	50%	50%	0%
SCHISTOSOMIAISIS (SCH)							
Complete mapping of SCH	Number of counties mapped for SCH	15	15	15	15	15	15
determined counties above intervention threshold and the Endemic population	Number of SCH endemic counties requiring SCH MDA	15	15	15	15	15	15
implementation of school-based/community-based treatments in Endemic counties	Number of endemic counties implementing SCH MDA	3	6	8	15	15	15

Objective	Indicator	Baseline (2015)	2016	2017	2018	2019	2020
Achieving 100% geographical coverage in SCH endemic counties	Geographic coverage of SCH MDA in 100 %	20%	40%	53%	100%	100%	100%
Achieve a therapeutic coverage of at least 75% annually in all treated endemic counties	Proportion of targeted population for SCH MDA treated	80%	82%	83.50%	85%	85%	85%
Conduct first impact assessment activities in at least 50% of SCH Endemic counties annually after MDA treatments	Proportion of SCH MDA IU benefiting first impact assessment	0%	0%	0%	50%	50%	0%
Conduct and Pass epidemiological and entomological assessment in 100% of IUs	Proportion of SCH MDA IU benefiting second impact assessment	0%	0%	0%	0%	50%	50%
SOIL TRANSMITED HELMINTHES (STH)							
Complete mapping of STH	Number of counties mapped for STH	15	15	15	15	15	15
Determined counties that have attained intervention threshold and the endemic population	Number of STH endemic counties	10	15	15	15	15	15
implementation of school-based/community-based treatments in Endemic counties	Number of endemic counties implementing STH MDA	10	13	15	15	15	15
Achieve therapeutic coverage of at least 80% in all treated counties.	Proportion of target population in endemic communities treated	59%	83.50%	84%	84.50%	85%	85%
Conduct first impact assessment activities in at least 50% of STH Endemic counties annually after MDA treatments	Proportion of STH IU benefiting impact assessment	0%	40%	53%	100%	100%	100%

Table15: Milestones for CM-NTDs

Objective	Indicator	Baseline	2016	2017	2018	2019	2020
LEPROSY							
Reduction of grade 2 disability among new leprosy cases	G2D rate per 1,000,000 inhabitants	1.66	ND	1.3	1.0	<1	<1
Reduction of new child leprosy cases with G2D	Proportion of new child leprosy cases with G2D	ND	0%	0%	0%	0%	0%
Cure at least 90% of patients on MDT	PB & MB leprosy Cure rates	50%	80%	80%	85%	90%	>90%
Achieve prevalence rates of <1/10,000 inh. in all counties	Number of counties with leprosy prev. rate of <1/10,000	10	12	13	14	15	15
BURULI ULCER							
Confirm at least 70% of suspected BU cases by PCR	proportion of BU cases confirmed by PCR	16%	25%	40%	50%	70%	70%
Reduce to <60% the proportion of ulcerative forms among new BU cases	Proportion of ulcerative forms among new BU cases	92%	90%	85%	80%	70%	<60%
Reduce to <25% the proportion of category 3 lesions at diagnosis	Proportion of category 3 lesions in new BU cases	71%	71%	65%	50%	20%	<25%
Reduce to <15% the proportion of limitation of joint movement in BU cases at diagnosis	Proportion of new BU cases with limitation of joint movement						<15%
YAWS							

Objective	Indicator	Baseline	2016	2017	2018	2019	2020
Determine the endemicity of yaws in all 15 counties	Number of counties mapped for Yaws	2	2	15	15	15	15
Implement the yaws eradication strategy in all endemic counties	Number of counties implementing the yaws eradication strategy	0	0	0	15	15	15
Reduce the number of counties reporting clinical cases of yaws to 0%	Number of counties reporting clinical cases of yaws	2	2	15	15	10	0
Reduce the number of counties reporting zero sero-prevalence in children 1-5 years.	Number of counties reporting zero sero-prevalence in children 1-5 years.	ND	ND	ND	ND	ND	7

PART 3: OPERATIONAL FRAMEWORK

The operational plan for the control of NTDs in Liberia is based on individual disease program goals, targets, specific objectives and control strategies for each disease according to WHO recommended strategies but implementation will be integrated. To achieve the goals and objectives, each individual disease program shall focus on its implementation strategies to ensure that their goals are achieved and hence contribute to the overall national goal in line with the Essential Package of Health Services (EPHS) and National Health Plan of Liberia.

3.1 SCALING UP ACCESS TO NTDS INTERVENTIONS ANDTREATMENT AND SYSTEM CAPACITY BUILDING

The status of NTDs endemicity in Liberia from the situation analysis emphasizes the need to continue with large scale MDA for onchocerciasis, lymphatic Filariasis, soil transmitted helminths and Schistosomiasis, while scaling up activities for leprosy and Buruli ulcer control. Additionally, activities surrounding morbidity management of lymphatic Filariasis and onchocerciasis need to be enhanced and implemented throughout Liberia. There is also a need that the program includes yaws, rabies and snake bites as targeted diseases and design appropriate strategies for intervention. There is also a need that the program work with other units to ensure surveillance and notification of other NTDs not yet identified in Liberia.

3.1.1 Scaling up access to preventive chemotherapy interventions

Onchocerciasis: MDAs using CDTI have been ongoing since 2000 in the North West for CDTI Project and in 2002 for South West and South East Projects. MDA coverage has reached full scale with 99% geographical coverage and 83% therapeutic coverage in 2013 and 2015. Efforts will be made to reach to 85% and 100% therapeutic and geographical coverage respectively for the next 5 years. Onchocerciasis activities are expected to be fully integrated in PHC delivery mechanism with government taking ownership in the provision of logistics with some external partners support within the next 3 – 5 years.

Lymphatic Filariasis: Integrated with the Onchocerciasis MDA in 2012, the programme conducted 2 rounds of MDA with Mectizan and Albendazole prior to the programme being suspended by Ebola in the 13 endemic counties. The MDA in 2013 achieved 99% geographic coverage and exceeded 83% programmatic coverage in the 13 endemic counties. There is a need to continue the MDA for the next 5 years. LF Re-mapping needs to be conducted in Gbarpolu and Bomi counties in order to ensure that these counties have not been wrongly classified as being LF free.

***Soil transmitted helminthiasis*:** STH are the most widespread endemic of NTDs in Liberia. The on-going Deworming program by the Ministry of Education will be scaled up to reach all school age children and cover all counties in collaboration with the Ministry of Health. In addition to school-based activities, other structures in the community will be used to conduct mass drug administration targeting school children, pre-school children and lactating mothers. MDA will be sustained annually to prevent re-infection. Case management will be strengthened and will continue in health facilities.

***Schistosomiasis*:** Schistosomiasis is prevalent in all counties. MDA was conducted in 4 counties (Bong, Lofa, Margibi and Nimba) in 2012, treating 344,248 school aged children, and in 3 counties (Bong, Lofa and Nimba) in 2013 treating 308,714 school aged children. Effort shall be made to reduce prevalence rates (< 10%) below the threshold for mass treatment with Praziquantel in all counties. The school remains one of the delivery channels to reach school age/going children within the targets specified for STH and Schistosomiasis treatment. The school principal in collaboration with parents' teachers association (PTA) and all the teachers at each school will be responsible to work with the health facility in their community.

Table 15: Types of mass drug administration implemented in Liberia

Cross-cutting MDA types	Delivery channels	Timing of treatments	Disease combination	Requirements	Target (Counties) - targeted	Other mass disease control interventions
MDA1: Ivermectin + Albendazole	Community-based campaigns/ CDTI	Once a year	Lymphatic Filariasis, Onchocerciasis, STH	Training of health personnel; Training of community volunteers; Social mobilization; Supervision Production of tools; Logistics for drug distribution and management	15 counties	EPI campaigns (STH in pre-SAC), ITN distribution and re-treatment
MDA 2 : Praziquantel only	Community-based campaigns/ CDTI; School-based campaigns	Once a year	Schistosomiasis	Training of health personnel; Training of community volunteers; Social mobilization; Supervision Production of tools; Logistics for drug distribution and management	13 counties	
MDA3: Azithromycin only	Community-based campaigns/ CDTI;	Twice a year, **OR** Once a year if Yaws is combined with Oncho & LF	Yaws	Training of health personnel; Training of community volunteers; Social mobilization; Supervision Production of tools; Logistics for drug distribution and management	15 counties	
MDA1+ MDA3: Ivermectin + Albendazole +	Community-based campaigns/ CDTI	Once a year	Lymphatic Filariasis, Onchocerciasis, STH, Yaws	Training of health personnel; Training of community volunteers; Social mobilization;	15 counties	

Azithromycin				Supervision		
				Production of tools; Logistics for drug distribution and management		

3.1.2 Scaling up access to case-management interventions

Buruli Ulcer: Mapping done for Buruli Ulcer in 2012-2013 shows that all fifteen counties are endemic for this disease. A cumulative number of 276 BU cases have been reported in Liberia between 2012 and 2015. Several clinicians have been trained in the clinical diagnosis and management of BU and its complication, in view of integrating BU care into the general health system. However, there is a need to scale up training for healthcare professional in all counties as well as including it along with other NTDs in the curriculum of training institutions. There is also a need to provide massive community awareness and sensitization to ensure that these cases are referred to areas of care. In this regard, community volunteers (especially CDDs) shall be trained in the suspicion cases during CDI activities, and referral of suspected cases to the health facilities for confirmation and treatment. Finally, providing access to quality BU care through establishment of diagnostic and treatment centres at county hospitals and referral centre confirmation of cases by PCR as well as the management of complications are envisaged.

Leprosy: According to report from the 2015 update of leprosy registers, five counties remain highly endemic for leprosy in Liberia. To achieve the elimination target in all counties by 2020, efforts shall be made to provide quality MDT services to all counties but with emphasis on the endemic pockets. Staff shall be trained on leprosy surveillance, early diagnosis and treatment of leprosy and leprosy reactions in order to reduce grade 2 disabilities in patients. Community volunteers (especially CDDs) shall be trained in the suspicion cases during CDI activities, and referral of suspected cases to the health facilities for confirmation and treatment.

Yaws: Cases of Yaws were detected in two counties (Sinoe and Lofa) by consultants during the 2015 update of leprosy registers and follow-up of 2013 BU assessment. Considering this as an eye opener to yaws endemicity in Liberia, and adhering to the WHO NTDs roadmap,

the Liberian NTDs Programme will carry out mapping for yaws in all counties by 2017. The Yaws Eradication Strategy will then be implemented in all endemic counties as from 2018 through 2020 so that by the end of 2020, the eradication of yaws is achieved in Liberia. For total community treatment strategy, staff shall be trained on the diagnosis and treatment of yaws.

In addition, community volunteers (especially CDDs) shall be trained in the suspicion cases during CDI activities, and referral of suspected cases to the health facilities for confirmation and treatment.

Build capacity for management of complications and chronic care: Surgical capacities of county hospitals shall be reinforced to manage complication of Case Management NTDs. Staff shall be trained in surgical skills and surgical kits, dermatomes and other inputs shall be provided to these hospitals. Then the hospitals would provide surgical care like excision and skin grafting for Buruli ulcer patients, curettage / amputations for leprosy patients with planta ulcers, hydrocelectomy for hydrocele patients etc. Existing functional rehabilitation centres shall also be strengthened.

Table 17: Activities for scaling up CM-NTDs intervention

Obj. No	Objectives / Activities/Sub activities	2016				2017				2018				2019				2020			
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
SP 1	**Scale-up access to interventions, Treatment & System Capacity Building**																				
SO-1.1	**Increase community access to NTDs programs**																				
1.1.1	CHVs/CHAs/CHWs to conduct Pre and Post Meetings with community leaders following all training and interventions					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
1.1.2	CHVs/CHAs/CHWs to conduct routine NTD awareness meetings to enhance Community Engagement					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
SO-1.2	**Ensure integration and/or co-implementation of CM –NTD with intervention**																				

	packages for PCT-NTDs																				
1.2.1	Development & Finalization of CM NTDs integrated training package																				
1.2.1.1	Development of Integrated CM NTDs training package				X																
1.2.1.2	Pilot integrated CM NTDs training package				X																
1.2.1.3	Validate CM NTDs training package				X																
1.2.1.4	Printing of Integrated CM NTDs training package				X																
1.2.2	Increase capacity at all levels through integrated in-service cascade training of Health workers (Health workers, CHVs/CHAs and Traditional healers) on treatment, management and referral of CM NTDs (& to suspect yaws)					x	x														
1.2.2.1	ToT at National level on treatment, management and referral of CM NTDs				X	x	x														
1.2.2.2	Training of County level staff on treatment, management and referral of IDM NTDs by national staff				X	X															
1.2.2.3	Training Health workers by county focal points on treatment, management and referral of CM NTDs					X	x														
1.2.2.4	Training of CHVs/CHAs by health workers on management and referral of CM NTDs					X	x														
1.2.3	Utilize existing MDA Campaign to identify suspected CM NTDs					x															

1.2.3.1	Providing CHVs/CHAs/CHWs with an integrated NTD start pack for training					X																
1.2.3.2	Update PCT-NTDs community Registers to include CM NTDs					X			X				X									
1.2.3.3	Conduct community based screening and refer suspected cases of CM NTDs during MDA campaign								X								X					
1.2.3.4	Ensure interim plan in place to diagnose and treat non-surgical cases of suspected cases while HSS is being scale up						X															
1.2.4	Kits and training provided to affected individuals by CHAs/CHVs and health workers enabling home based self-care for CM - NTDs and distribution of WASH kits					X			X				X									
SO-1.3	**Establish and strengthen referral systems for all NTDs at the community level using CHVs/CHAs/CHWs for routine active case finding**																					
1.3.1	Conduct a workshop to integrate the CM NTD referral strategies into existing MoH documentations						X															
1.3.2	Conduct active case detection and referral for CM NTDs at community level by CHVs/CHAs/CHWs						x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
1.3.3	Upgrading Ganta Leprosy Rehabilitation and Training Centre to a tertiary health facility for complication all NTD cases and training																					
1.3.3.1	Confirmation of land ownership around facilities						X															
1.3.3.2	Procure capital hospital																					

	material, furniture and equipment							X														
1.3.3.3	Increasing capacity by updating operating theatre, laboratory and training centre: Expansion of Clients service area						X															
1.3.3.4	Increasing capacity by updating operating theatre, laboratory and training centre: Construction of Training facilities					X																
1.3.3.5	Acquisition of office equipment						X								X							
1.3.3.6	Expendable materials and equipment					X					X				X				X			
1.3.3.7	Staff/HR Retention					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
1.3.3.8	Upgrading of facilities to include 24 hour electrical services					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
1.3.3.9	Establishment of MoU with Methodist Hospital for treatment and support services					X																
SO - 1.4	**Rehabilitation and reintegration programmes for post-CM NTD patients established and operational**																					
1.4.1.1	Est. partnership with charitable organization/relevant stakeholders proving eye care, CBR					X	X	X														
1.4.1.2	Identify and refer patients needing socio-economic rehabilitation, reintegration and ophthalmic care					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
SO-1.5	**Training of specialised health workers on CM NTDs procedures including surgeons, anaesthetists, physiotherapists, lab techs and orthopaedic specialists**																					
1.5.1	Training of specialised health workers on CM																					

	NTDs procedures including surgeons, anaesthetists, physiotherapists, lab techs and orthopaedic specialists																						
3.5.1.1	Train surgeon and anaesthetist on CM NTD procedures from each county as ToT at Ganta Leprosy Rehab centre.					X																	
1.5.1.2	Training of 4 surgeons and 8 support staff per county on CM NTDs (and retraining after 3 years)						X			X													
1.5.1.3	Train 2 laboratory technicians per county to conduct diagnostic tests for investigation and confirmation of I CM NTDs (including yaws)					X																	
1.5.1.4	Train 1 Orthopaedic technician per county on surgical management							X															
1.5.1.5	Training of 2 physiotherapist assistant per county for CM NTD cases							X															
1.5.1.6	Recruit TA (international) to Train in country physiotherapy Assistants						X																
SO 1.6	**Ensure procurement and supply of materials equipment and drugs CM NTD treatment and management**																						
1.6.1	Integrate into the national supply chain system for materials, equipment and drugs used by CM NTD treatment and management programme						X																
1.6.2	Procurement of health commodities required for CM NTDs management such as surgical materials, equipment, drugs and wash kits sent to	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

	Counties and Health Facilities																					
1.6.2.1	Procurement of health drugs, dressings and disposables for CM NTDs from health facilities up						X				X				X				X			
1.6.2.2	Training of County Pharmacist on Timely quantification of drugs, dressings and disposables for CM NTDs from health facilities up							X														
SO-1.7	**Strengthen capacity at central, county , district and community levels for NTDs program management and implementation**																					
1.7.1	Conduct Peer exchange visits to countries (adapting good practices) with strong CM NTDs existing programs	X	X	X	X			X			X				X					X		
1.7.2	Training of National and county NTD focal points on CM NTDs programme management					X																
SO-1.8	**Establishing and strengthening existing rehabilitation and reintegration programmes for post-CM NTD patients**																					
1.8.1	Training of 2 psychosocial counsellors per County on CM NTD specifics to aid in the rehabilitation of Cm clients						X															
1.8.2	Ensure provision of assistive devices and referral for ophthalmic care to all CM NTD patients necessary																					
1.8.2.1	Identify the number and type of assistive devices that will be required for CM NTD patients					X			X			X				X						
1.8.2.2	Integrate the assistive devices into the national supply chain for CM NTDs							X														
1.8.2.3	Procure assistive devices for all CM NTD patients who require them						X				X				X				X			
1.8.2.4	Est. partnership with																					

	charitable organization providing eye care					X	X	X	X														
1.8.2.5	Identify and refer patients needing ophthalmic care					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
1.8.3	Surgical interventions conduct for Hydrocele and BU Cases in County Hospitals					X				X				X				X					

3.2.3 Scaling up NTDs transmission control interventions

Table 18: Intervention packages for transmission control

Cross-cutting interventions	Targeted NTDS	Requirements	Other non-NTD opportunities for integration
Vector • Insecticide treated nets; • Indoor residual spraying; • Environmental management.	Lymphatic Filariasis, onchocerciasis, Malaria, Yellow fever All NTDs	ITNs DDT determine insecticide Plastering of walls IEC/BCC Materials (Flyers, posters, Billboards brochures etc.) PA System	Malaria vector control; Integrated vector management (IVM).
Health Education • Community sensitization • School awareness • HF awareness	All NTDs	Building Materials Chlorine Tools (cutlass, hovels, hoes, wheelbarrows etc.)	Health Promotion Unit Community Health Services Division
Community Lead Total Sanitation • Latrine Construction • Safe drinking water sources (chlorinated wells and hand pumps) • Community Clean Up Campaigns	STH/ Schistosomiasis		Environmental Health Division
Deworming Campaign	STH	Mebendazole	Nutrition Division

Table 19: Activities for disease transmission control

Obj. No	Objectives / Activities/Sub activities	2016				2017				2018				2019				2020			
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
SO-3	SO- 3: Strengthening integrated vector management and other "PHASE" interventions for the targeted NTDs.																				
SO 3.2	*Strategic Objective 3.2: Improving Health Education and Community Engagement*																				
3.2.1	Update IEC materials and identify key methods of sensitization				X	x															
3.2.1.1	Conduct 2-day review meeting of IEC materials with partners and county health teams				X	x															
3.2.1.2	Distribution of IEC materials to all communities					x															
3.2.2	Enhancing community engagement by improving community ownership of MDA programme					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
3.2.2.1	Conduct 2-day meeting at national level with county health officers to identify key methods of community engagement					X	X			X				X				X			
3.2.2.2	County health teams conduct 2-day meeting with DHOs, identifying key methods to enhance community engagement					X	X	X		X				X				X			
3.2.2.3	Develop and outline strategies identified in meetings with CHO and DHOs					X	X	X		X				X				X			
3.2.3	Training on NTDs integration into CHV and Health Worker training programmes						X			X				X			X	X			
3.2.3.1	Integrate training material into existing training and re-training programmes of CHV				X	X															
3.2.3.2	Conduct 5-day meeting to develop training materials for NTDs (LF, SCH, STH, Oncho, Leprosy, BU) and associated					X				X				X				X			

	morbidity conditions to be integrated into CHV training activities with partners and teaching institutes																						
SO 3.3	*Strategic Objective 3.3: Improving Water, Sanitation and Hygiene through collaborations with Division of Environmental and Occupational Health*																						
3.3.1	Improve NTDs visibility in Water and Sanitation within Liberia				X	X																	
3.3.1.1	Identify key international WATSAN partners l within Liberia				X	X																	
3.3.1.2	Conduct 3-day meeting to review WATSAN strategic plan with MoH and partners to ensure NTDs are included				X	X																	
3.3.1.3	Conduct review meeting with partners (year 3) to evaluate progress of WATSAN plan in Liberia				X	X																	
SO 3.4	*Strategic Objective 3.4: Improving Integrated Vector Management (IVM) through working with the MoH Malaria Control Programme*																						
3.4.1	IVM plan reviewed with partners (Malaria Vector Control Programme, NGOs, etc.)				X	X																	
3.4.1.1	Conduct 2-day workshop with IVM partners to review and highlight gaps in IVM plan					X				X				X				X					
3.4.1.2	Conduct 2-day workshop/practical demonstrations for CHOs, county NTDs focal points and county Malaria focal points					X				X				X				X					
3.4.1.3	Distribute IVM guide to all partners and appropriate county officials					X				X				X				X					
3.4.2	Distribution of insecticide treated nets (ITNs) to all communities; reaching 80% of households																						
3.4.2.1	Training a CHV in each community to distribute ITNs in their community			X				X				X				X				X			
3.4.2.2	Support IVM partners in the procurement of ITN		X				X				X				X				X				

3.4.2.3	Support counties and IVM partners in the distribution of ITNs to all communities			X				X				X				X				X			
3.4.3	Indoor Residual Spraying (IRS) of 80% of houses in all communities																						
3.4.3.1	Train IRS teams to conduct spraying of households			X				X				X				X				X			
3.4.3.2	Support IVM partners in the procurement of IRS components		X				X				X				X				X				
3.4.3.3	Support counties and IVM partners in the distribution of IRS to all communities			X				X				X				X				X			

3.3 PHARCOVIGILANCE IN NTD CONTROL ACTIVITIES

Pharmaco-vigilance is a system of monitoring and evaluating suspected adverse effect(s) of a particular pharmaceutical product. It is the Monitoring system that identifies and investigates any report of Severe Adverse Effects (SAE) associated with the use of NTDs drugs.

The introduction of NTDs medical products during implementation poses a number of challenges to health services in resource-poor countries like Liberia. Healthcare personnel will be required to ensure correct prescription through training, effective distribution channels and the fostering of compliance by patients and management of SAEs. An appropriate Pharmaco-vigilance system will be put in place to monitor the potential occurrence of unexpected adverse reactions. The recipients of NTDs drugs will be informed on the likely side effects and the procedure for reporting SAEs. In over 10 years of experience with large scale Ivermectin treatment in Liberia there have not been reports of serious or life threatening adverse reactions, although there has not been a good experience with large scale treatment of other NTDs medicines.

It is recognized that safety monitoring of all drugs is a necessity for public health. Thus, the proposed generic system aims to capture suspected adverse events associated with all drugs and it is not specific to NTDs drugs only.

Coordination by the national Pharmaco-vigilance unit as it is already for various disease control programs at national level will be required. The Expert Safety Review Panel will interpret safety issues associated with NTDs drugs.

Table 20: Activities for strengthening pharmaco-vigilance in NTDs programmes

Obj. No	Objectives / Activities/Sub activities	2016				2017				2018				2019				2020			
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
SO 4.5	***Strategic Objective 4.5 : Integration of NTDs into the National pharmaco-vigilance system***																				
4.5.1	Advocate for the strengthening of a National Pharmaco-vigilance system																				
4.5.1.1	Hold advocacy meeting with the NDS, Pharmacy Division, Malaria Control				X	X															
4.5.1.2	Advocate for the inclusion of NTDs drugs on the National Essential Drug list.				X	X															
4.5.2	Integrate NTDs into national pharmaco-vigilance system																				
4.5.2.1	Collaborate with Supply Chain unit to develop guidelines for pharmaco-vigilance and tools to track adverse drug reactions.				X	X															
4.5.3	Build capacity for NTDs officers on Pharmaco-vigilance																				
4.5.3.1	Conduct training for NTDs officers on Pharmaco-vigilance at county level					X															
4.5.3.2	Supervise downstream training of frontline health workers on Pharmaco-vigilance					X															
4.5.3.3	Develop and disseminate SAE reporting forms					X															

4.5.3.4	Support Counties for Severe Adverse Events management from MDA						X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

3.4 STRENGTHENING CAPACITY AT NATIONAL LEVEL FOR NTDS PROGRAMME MANAGEMENT AND IMPLEMENTATION

The national NTDs program was initiated in 1999 and has grown in personal and geographical coverage in Liberia. The national staff is responsible for advocacy, resource mobilisation, coordination, monitoring, training and accountability of each NTDs program. In 2012 there was a shift in responsibility from a single supervisor within the community health unit to national level programme managers and focal persons at the county level. These focal persons work with the disease surveillance officers, who were already established at district level. This indicates a transition toward an integrated program as opposed to a vertical one.

The advantages of this integrated program have enabled harmonization, alignment, and allowed oversight of all NTDs in a simple but effective manner.

In order to run an effective NTDs program there has to be a holistic team including laboratory technicians, pharmacists, finance officers, data managers and health workers. These staff members need to be trained on relevant program protocols. To date, 6 lab technicians at the central MOH have been trained on laboratory diagnostics. To ensure that this knowledge is present at the grass roots level, additional training of county and district lab technicians needs to take place.

In addition, 10 Central level staff requires additional training in their area of expertise, for example, project planning, M & E and data management. Through cascaded training this is expected to be disseminated to relevant county and district staff.

All medicines that are procured for NTDs programs should be registered. This means that the expiry date of the drugs, place of manufacture, the batch number and the amount of the drugs received are maintained in a database. These drugs should be monitored by the National Supply Chain Management and the appropriate guidelines should be enforced. This

includes following guidelines for donated and non-donated drugs. Furthermore, the "first-in first-out" system should be adopted at all levels to avoid expiration of large quantities of drugs. There should be correct management and disposal of pharmacological waste according to the WASH Safety Plan. There should be development and implementation of pre and post-marketing surveillance of medicines. This should include monitoring and reporting of poor quality medical products and efficient methods of dealing with the prevention and monitoring of severe adverse events.

Table 21: Activities and resources needed for strengthening capacity for NTDs programme

Obj. No	Objectives / Activities/Sub activities	2016				2017				2018				2019				2020			
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
SO 4.6	Strategic objective 4: Strengthening capacity at national level for NTDs programme management and implementation																				
4.6.1	Build capacity in NTDs programs management for NTDs staff																				
4.6.1.1	Conduct institutional, organizational and technical capacity assessment of NTDs Program at National and county levels					X															
4.6.1.2	Support 23 national NTDs staff for external training (Leadership & management; M&E and Research; Disease specific NTDs)					X															
4.6.1.3	Recruit and train 15 county NTDs staff for internal training					X															
4.6.1.4	Recruit and train district health team officers for NTDs(including case						X														

	management NTDs)																			
4.6.1.5	Support pre-service institutions and MOE to integrate all NTDs into academic curriculum						X	X	X											
4.6.1.6	Conduct 2-days Training on oral presentation and communication skills for 23 national level staff					X														
4.6.1.7	Conduct training for County Data managers on NTDs						X													
4.6.2	Provide incentive to strengthen National and County staff capacity in program management and implementation																			
4.6.2.1	Provide monthly additional Incentive/top-up for NTDs Program Staff at central and County levels for motivation					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
4.6.3	Strengthen National and county capacity in Supply Chain and procurement																			

4.6.3.1	Develop annual procurement plan for NTDs program					X																
4.6.3.2	Submit annual application and re-application of donated drugs (Mectizan, Albendazole, MDT, Praziquantel)				X			X				X				X				X		
4.6.3.3	Provide clearing charges for imported drugs and supplies								X				X				X					X
4.6.3.4	Coordinate with National Supply chain and procurement divisions to procure non donated NTD drugs and medical supplies							X				X				X				X		
4.6.4	Equip and ensure maintenance of NTDs Offices																					
4.6.4.1	Procure 2 vehicles for central NTDs coordination team						X															
4.6.4.2	Procure office equipment and supplies for NTDs Central Office and county offices (computers, accessories, etc.)						X															
4.6.4.3	Provide vehicles running cost and maintenance					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
4.6.4.4	Provide internet and telephone(office-related airtime) services					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
4.6.4.5	Provide 106 motorbikes for 15county focal persons and 91 district focal persons						X															
4.6.4.6	Procure 3,000 bicycles for CDDs						X															
4.6.4.7	Conduct assessment of equipment and supplies at central, county and district levels				X	X																

4.6.4.8	To provide training on the DHIS in conjunction with other running health programs					X				X				X				X			

Table 22: Scaling up plan

NTD Type		Total No. counties requiring MDA & Pop. at risk	Total No. counties targeted for MDA/CM & Pop. To be treated in 2016	Total No. counties targeted for MDA/CM & Pop. To be treated in 2017	Total No. counties targeted for MDA/CM & Pop. To be treated in 2018	Total No. counties targeted for MDA/CM & Pop. To be treated in 2019	Total No. counties targeted for MDA/CM & Pop. To be treated in 2020
PCT-NTDs							
LF	No. of counties	13	13	13	13	13	13
	Population	2,747,884	2,308,223	2,356,696	2,406,186	2,456,716	2,508,307
Oncho	No. of counties	15	15	15	15	15	15
	Population	2,945,689	2474379	2,526,341	2,579,394	2,633,561	2,688,866
Schisto	No. of counties	13	3	12	4	4	12
	Population	2,945689	435,136	818,608	437050	446,228	871,271
STH	No. of counties	15	15	15	15	15	15
	Population	2,945,689	883,707	902,265	921,212	940,558	960,309
CM-NTDs							
BU	No. of counties	15	15	15	15	15	15
	Population/Cases	4,035,433	105	150	200	225	250
Leprosy	No. of counties	15	15	15	15	15	15
	Population/Cases	4,035,433	330	350	400	350	250
Yaws	No. of counties	ND	-	-	15	15	15
	Population	4,035,433	-	-	4,279,048	4,368,908	4,460,655

3.5 ENHANCING PLANNING FOR RESULTS, RESOURCE MOBILIZATION AND FINANCIAL SUSTAINABILITY

The preparation of the NTDs Master Plan involved stakeholders in the country. These stakeholders include County Health Teams, Line ministries and agencies, civil society, UN-Agencies, international non-governmental organizations, faith-based groups, and the affected communities. However, for an effective coordination of the NTDs response based on the plan:

- NTDs secretariat will produce and popularize the document among stakeholders including the private sector.
- Operational plans with budgets will be developed annually for support from the sector-wide budget and other efforts will be made to fill funding gaps
- The National NTDs Program supported by GOL, UN agencies and other development partners will fund objectives, strategies and activities derived from the Master Plan
- The Government of Liberia to organize a donor forum to launch the Master Plan and mobilise resources to implement the plan
- NTDs will convene the quarterly meeting with stakeholders at the national level and would support the County Health Team to conduct similar stakeholders meeting at the county, district and community levels
- Stakeholders implementing NTDs interventions in the country will derive objectives, strategies and activities relevant to their strategic priority thematic focus from the Master-Plan
- Monitor, evaluate, document and disseminate reports of activities of stakeholders in the country in line with the Master Plan
- NTDs Secretariat will produce a quarterly newsletter as a platform to communicate with stakeholders highlighting activities, achievements, up-coming events and other relevant issues.
- Conduct annual review of the Master Plan at the national level and make necessary adjustments in event of emerging issues.
- NTDs secretariat in the cause of the implementation period (2016-2020) will use the Ministry of Health website for the publication and wide dissemination of national and county report, plans, study reports etc.

Table 23: for activities of strategic priority 2

Obj. No	Objectives / Activities/Sub activities	2016				2017				2018				2019				2020			
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
SP 2	Strategic Priority 2: Enhance Resource Mobilization in Planning for Results in NTDs Control																				

2.1	Ensure Development update of NTDs guidelines policy and tools																				
2.1.1	Conduct workshop for development of guidelines and policies				X	X															
2.1.2	Validation meeting for the Integrated National Policy Guideline for Implementation of the NTD program						X														
2.1.3	Print national policy guideline						X														
2.1.3	Dissemination of National Policy Guideline for implementation of IDM NTD program						X	X													
2.2	increase community participation in NTD Planning and resource mobilization , civil society																				
2.2.1	Development IEC materials, tools and strategies for community sensitization and awareness for NTDs						X														
2.2.2	Print and Pilot of IEC Material, Tools and Strategies for community sensitization and awareness for NTDs						X	X													
2.2.3	Validation, Updating and Finalize Review of IEC material every 2 years							X													
2.2.4	Printing of IEC material, Tools and Strategies for community sensitization and							X													

	awareness for IDM NTDs																				
	Dissemination of IEC Material							X	X	X	X	X	X	X	X	X	X	X	X	X	X
2.3	Enhance resource mobilization approaches and strategies for NTDs interventions																				
2.3.2	Conduct meeting with line ministries and legislature to solicit funding					X															
2.3.3	Mobilize external funding with stakeholders including partners, research and academic institutions and donors through media					X															
2.3.3.1	Identifying Funding Sources					X															
2.3.3.2	Development of Proposal for funding					X	X			X	X			X	X			X	X		
2.3.3.3	Advocate with partners for funds					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
2.4	Conduct high level advocacy for the NTD program with government of Liberia to secure additional funding support .					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
2.4.1	select key indicators				X	X															
2.4.2	advocate for Inclusion of selected key Indicators into HIS/DHIS2				X	X	X														
2.5	Strengthen integration and linkages of NTDs programme and financial plans into																				

	sector wide and national budgetary and financing mechanism.																				
2.5.1	Integrate into monthly county health team				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
2.6	Develop integrated multi -year plan and gender sensitive annual operational plan for the control , elimination and eradication of targeted NTDs.																				
2.7	Develop and validate a gender strategy to identify key issues and indicators pertaining to NTDs					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
2.7.1	Conduct workshop to identify key issues and indicators pertaining to gender-sensitivity for NTDs.					X															
2.7.2	Validation of Gender-sensitivity Plan					X															
2.7.3	Printing of Gender-sensitivity Plan					X															
2.7.4	Dissemination of Gender-sensitivity Plan						X					X					X				

3.6 STRENGTHENING GOVERNMENT OWNERSHIP, ADVOCACY, COORDINATION AND PARTNERSHIPS

The base for an effective and efficient NTDs Program hinges on the strength of the coordination mechanism, efficiency of allocation and utilization of available resources.

The NTDs Program has been set up with coordinators appointed for some of the diseases and a manager to head the NTDs Secretariat at the national level with political commitment and support from the government. NTDs are already integrated in policy and plans and Essential Packages of Health services (2012 – 2021). The Ministry of Health is the

lead institution for NTDs and hosts the secretariat. NTDs control has been included in the operational plans of the counties. The Ministry of Health has undertaken to revise the Essential Drug List, and National Formulary and Standard Treatment Guidelines to reflect the Essential Package of Health Services (NTDs medicines also included) and the National Drug Policy. The composition of the NTDs steering committee is already established and needs to be broadened to involve more stakeholders.

More resources are needed for it to perform its oversight function. An institutional and technical capacity assessment of NTDs Program, development of NTDs policy and human resources manual are imperative to align it with the functions and responsibilities of the staff. There is a need to build the capacity of NTDs program managers and the steering committee to advocate and get support from all levels (National, County, District and Community) as well as mobilize resources from other sources to increase the resource envelope for NTDs based on its needs.

Table 24: Activities for strategic priority 1

Obj. No	Objectives / Activities/Sub activities	2016				2017				2018				2019				2020			
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
SP 1: Strengthening Government Ownership, Advocacy, Coordination and Partnerships																					
SO 1.1	**Strengthen coordination mechanism amongst the line ministries for the NTDs control program and at the central, county, district and community levels**																				
1.1.1	Establish National Steering Committee					X															
1.1.1.1	Conduct official appointment and induction of Steering committee members					X															
1.1.1.2	Hold quarterly National steering committee meetings					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
1.1.2	Integrate NTDs into Monthly County level coordination meeting with all stakeholders					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

1.1.3	National Quarterly NTD Review meeting to be linked with NLTCP meeting including all counties and national focal points and stakeholders																				
1.1.3.1	Mobilize counties, district and stakeholders to attend quarterly meetings					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
1.1.4	Advocate for the funding and induction of an NTD focal person in each county																				
1.1.4.1	Organize meetings with NTDs partners					X	X														
1.1.5	Monthly NTDs TWG partnership with NTDs program and other line Ministries to highlight recent developments, outcomes and plans for the following month																				
1.1.5.1	Support monthly TWG meetings				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
1.1.6	Advocate for the integration of CM and PCT disease packages into the pre-service curriculum for all healthcare workers																				
1.1.6.1	Preparation of an integrated NTD Training Module				X	X															
1.1.6.2	Printing of Training Module						X														
1.1.6.3	Conduct meetings with relevant departments and training institutions for inclusion of NTD Training module into their curricula						X														
1.1.6.4	Teaching of integrated NTDs Control in training schools for health personnel and faculties						X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

	of medicine/health sciences																				
1.1.7	Advocate for the integration of NTDs disease packages into the training modules for all community health assistants and volunteers				X																
1.1.7.1	Prepare and print integrated training guide for community volunteers				X	X															
1.1.7.2	Conduct meetings with CHSD					X															
1.1.7.3	Training of community volunteers on integrated NTD activities					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
SO 1.2	**Strengthening coordination mechanism for NTDs control programs at community levels**																				
1.2.1	Integrate NTDs into monthly meeting of CHVs/CHA with health facility OIC to report on conditions within the community																				
1.2.1.1	Formal communication to CHTs				X																
1.2.1.2	NTDs discussed at monthly county coordination meetings					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
1.2.2	Advocate with CHSD for CHVs/CHA to conduct Pre and Post Meetings with community leaders following all training and interventions																				
1.2.2.1	Conduct meetings with CHSD					X		X		X		X		X		X		X		X	
SO 1.3	**Strengthen and foster partnership for the control, elimination and eradication of NTDs at central, county, district and community levels as well as international levels**																				

1.3.1	National NTDs team being members of and attending key international meetings such as NNN, COR-NTD and disease specific meeting																					
1.3.1.1	Attend/Organize regional MRU meetings for NTDs activities								X				X				X					X
1.3.1.2	Attend WHO meeting on Buruli ulcer					X				X				X				X				
1.3.1.3	Attend Afro Regional NTDs meeting						X				X				X				X			
1.3.2	Support counties to Organize cross border meetings for NTDs activities																					
1.3.2.1	Central to provide technical and financial assistance						X				X				X				X			
SO 1.4	**Ensure high level review of NTDs program performance and the use of lessons learned to enhance advocacy, awareness and effective implementation**																					
1.4.1	National Annual NTD review meeting to be linked with the NLTCP review meeting with all counties and national focal points, stakeholders and international partners																					
1.4.1.1	Conduct NTDs program annual meeting to evaluate program implementation								X				X				X					X
1.4.1.2	Conduct 1 day validation workshop for NTDs Master plan				X																	
1.4.2	Midterm external review of strategic plan to evaluate the performance of the programme and lessons learned																					
1.4.2.1	Plan and invite the reviewers											X										

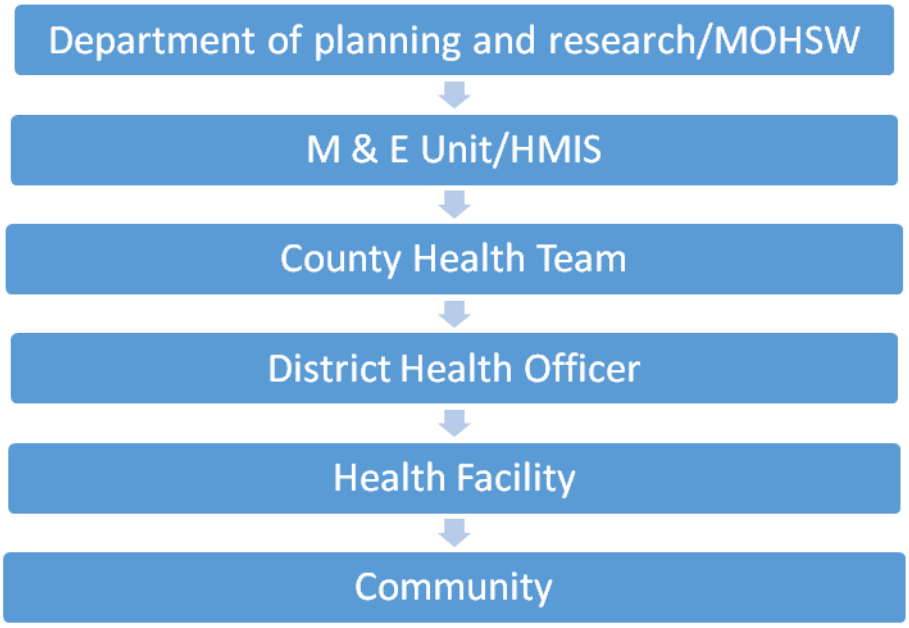
1.4.2.2	conduct the review											X									
1.4.3	Implement recommendation of the midterm review												X	X	X	X	X	X	X	X	
1.4.4	End term review of Masterplan (2020) to evaluate the performance and success of the NTD programmes																				
1.4.4.1	Plan and invite the reviewers																			X	
1.4.4.2	Conduct the review																				X
1.4.5	Implement recommendation and revise the strategic plan																				X
SO 1.5	**Strengthen advocacy, visibility and profile of NTDs interventions that will lead to control elimination and eradication at all levels**																				
1.5.1	Initiate National Operational Research Taskforce for NTDs to push for the development of technical publications on activities					X															
1.5.1.1	Conduct official appointment of National Operational Research Taskforce					X															
1.5.1.2	Mobilize task force members					X															
1.5.1.3	Determining NTDs research priorities					X															
1.5.2	Coordinate, facilitate and Conduct operational research																				
1.5.2.1	Liaise with research institutions/individuals						X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
1.5.2.2	Facilitate obtaining the ethical/administrative clearance						X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
1.5.2.3	Plan and conduct research						X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
1.5.3	Share and use research findings																				
1.5.3.1	Present key findings and						X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

	challenge of activities at national and international meetings																				
1.5.3.2	Publication in peer review journals						X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
1.5.3.3	Use research findings for decision making						X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
1.5.4	Develop a Liberian NTD portfolio covering all activities that can be presented to partners and donors																				
1.5.4.1	Collect data on activities through the HIS					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
1.5.4.2	Capture Success stories of NTDs activities					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
1.5.4.3	Print portfolios for NTDs programme						X				X				X				X		
1.5.4.4	Hire a consultant for film documentary and portfolio design						X				X				X				X		
1.5.5	Create awareness through media, “Disease day” campaigns, working with affected individuals and school health clubs																				
1.5.5.1	Mobilize people affected by the conditions to increase awareness					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
1.5.5.2	Work with MOE to integrate NTDs into School Health Club activities to increase awareness					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
1.5.5.3	Radio broadcasts and other media sources discussing NTDs					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
1.5.5.4	Utilize World “disease days” to create awareness					X		X		X		X		X		X		X		X	

3.7 MONITORING AND EVALUATION

In Liberia, routine M & E systems for health under the MOH are the HMIS including disease surveillance which provides overall information of health status of the population. The HMIS data collection tools are designed to capture the facility (public and private) data and collecting data from routine systems of other programs and periodic surveys. The two sources serve the need for providing data for relevant performance indicators that will address the Sustainable Development Goals (SDG), the Liberia Strategy for Growth & Poverty Reduction (LSGPR), and the Health Sector Reforms Strategic Plan (HSRSP). The routine data collected through HMIS is supported by a computer system at County Level. The District Health Information System (DHIS) is a software package adapted for use in Liberia to enter Quarterly aggregated data from all facilities for all programs for which NTDs is not an exception. HMIS is also improving its data warehouse to include other aspects of health-related data by integrating the data collection tool. Several key NTD programmatic indicators will also be captured in this system.

On the other hand, measurement of impact and outcome is done at program level through its routine reporting system which includes annual progress reporting and program performance reports. Moreover, mid-term and end term evaluation, data quality assessments and Knowledge, Attitude and Practice for measuring community attitude will be used. The channel of reporting and feedback system at the MOH is diagrammed below, with reporting from lower to the higher levels of the system and feedback from the higher to the lower levels.



In consonance with the three ones principle: "one national plan, one coordinating body and one M&E system", the MOH now has the Program Coordinating Team (PCT) which coordinates the implementation of one National Health Plan. The Ministry has also endorsed the one Monitoring & Evaluation concept which is intended to serve as the source of health data and information products for planning and decision making at all levels. Key elements of the One M&E concept include the following: A National Monitoring & Evaluation System/Framework, Standardized and Integrated data collection and reporting tools, a reporting system with timelines for reporting, Concise guidelines and procedures for reporting, Consistency in source of health data and information products, coupled with Rationalization of Resources and Sustainability.

The MOH recently decentralized M&E functions at the county level. This has led to one National M&E System, with selected indicators that will be monitored and evaluated at various levels, depending on the type of indicator.

The M&E officer in the NTDs program will monitor, verify and analyze data on the selected NTDs program indicators, as well as periodically verify and validate reported data from County M&E Units with the National M&E and HMIS Units. All selected output, process and input indicators will be monitored by the County M&E Units. The data source for most of the selected output indicators will be the HMIS which has now been decentralized to all 15 counties. A set of standardized and integrated data collection and reporting tools has

been developed for the entire health system (health facility and community) and will provide a means to integrate selected NTDs indicators.

Each NTD program has outlined their annual monitoring and evaluation activities. Through these activities and corresponding indicators outlined in annexes the NTD programs will be able to evaluate their position in relation to the end goals set in 2012 and updated in 2015. Specific tables in the annexes outline the process each NTD program will use to attain to appropriate target.

The WHO African Region's framework for NTD programme monitoring and evaluation is shown in figure 5 below.

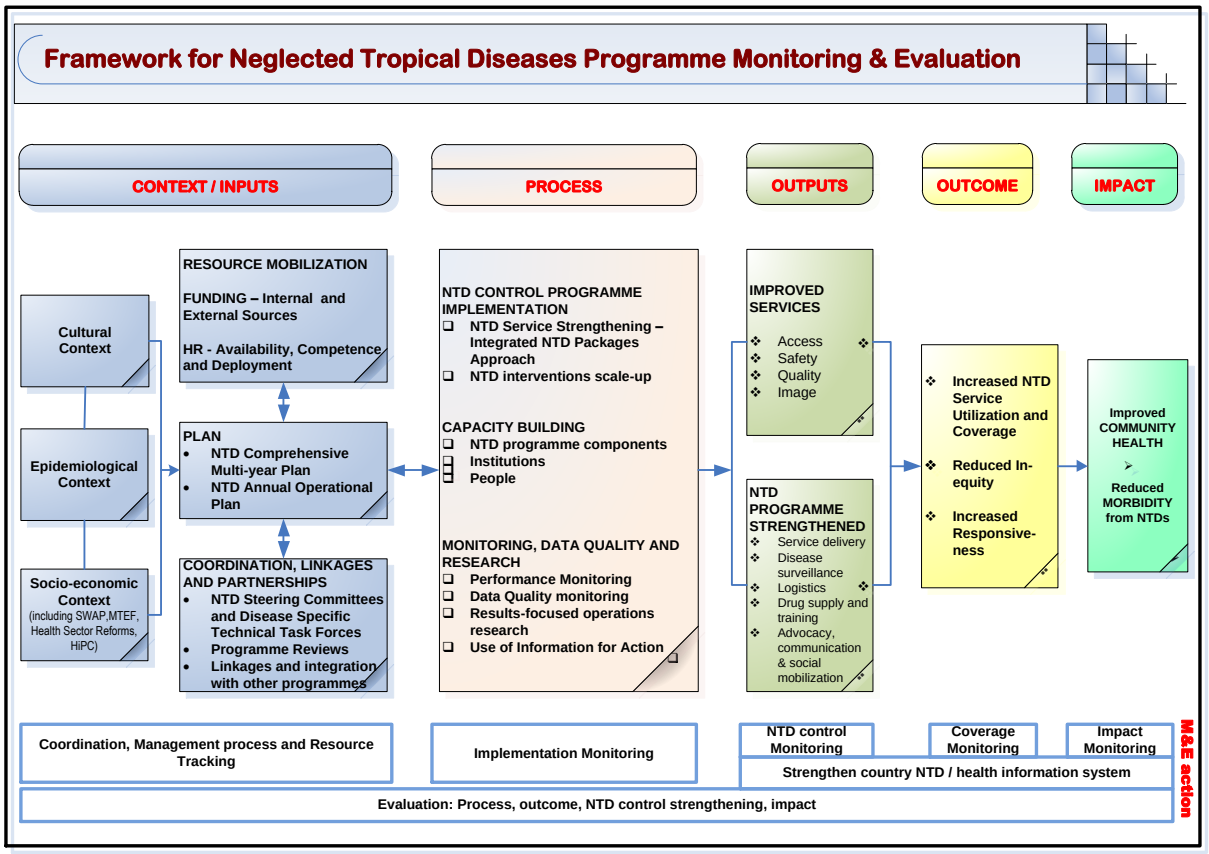


Figure 5: The WHO African Region's M&E structure for NTD programmes

Table 25: Strategic Priority 4: Enhance NTD monitoring and evaluation, surveillance and operations research

Obj. No	Objectives / Activities/Sub activities	2016				2017				2018				2019				2020			
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Strategic priority 4: Enhance monitoring, supervision, surveillance and operational research																					
SO4.1	**SO4.1 Improve Monitoring and Supervision Tools to reflect NTDs indicators**																				
4.1.1	Supervision of District training at county by central level																				
4.1.1.1	Print supervision tools					X				X				X				X			
4.1.1.2	Fill the supervision tools					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
4.1.1.3	Give feedback					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
4.1.2	County to make quarterly reports to central																				
4.1.2.1	Create District Clearance and Reporting Procedure and System					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
4.1.2.2	OIC report to district weekly					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
4.1.2.3	District monthly report to county					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
4.1.2.4	County provide feedback to district					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
4.1.3	Conduct mapping Yaws to establish burden estimates																				
4.1.3.1	Identify and Train Mapping Staff both at Central and local levels					X															
4.1.3.2	Identify lead facilitator to lead Mapping at County and District levels					X															
4.1.3.3	Prepare and formulate action plan and sample for Mapping					X															
4.1.3.4	Prepare TOR and Work Objectives					X															
4.1.3.5	Data collection, analysis and reporting						X														
4.1.4	**County** conduct monthly supervision at district levels																				
4.1.4.1	Print and fill supervision checklists					X															
4.1.4.2	Define TOR and					X															

	Responsibilities																			
4.1.5	Central level conducts quarterly supervision, monitoring and evaluation activities to counties					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
4.1.6	Counties conduct monthly supervision at districts					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
4.1.6.1	Prepare Regional M&E Plan that will feed into National M&E for NTDs						X													
SO4.2	**SO 4.2 Strengthen Surveillance activities at levels of NTDs**																			
4.2.1	Train county data managers and M&E county officers, NTDs focal persons in the use of NTD data tools (integrated training)																			
4.2.1.1	Identify Facilitators and Venue for the Training					X														
4.2.1.2	Organize and identify participants in county					X														
4.2.2	Train district data clerks on the use of NTDs data tools (integrated training)																			
4.2.2.1	Identify Facilitators and Venue for the Training					X														
4.2.2.2	Organize and identify participants from District levels					X														
SO4.3	**Develop and Promote Integrated NTDs Framework and improve Monitoring of NTDs within the context of the NHIS**																			
4.3.1	conduct a workshop to develop national M&E Plan which will include all supervision, recording and reporting guidelines																			
4.3.1.1	Identify Facilitators and Venue for the workshop				X															
4.3.1.2	Organize and identify participants from Central to District levels				X															
4.3.2	Pilot test and validate M&E Plan and guidelines																			
4.3.2.1	Identify Centres for Pilot Testing					X														
4.3.2.2	Train Supervisors and					X														

	Facilitators																					
4.3.2.3	Design structures, TORS and guidelines for Pilot testing					X																
4.3.2.4	Produce M&E Tools including Questionnaires						X															
4.3.2.5	Conduct validation of the M&E plan and guideline						X															
4.3.3	Print and disseminate national NTDs M&E Plan Guidelines																					
4.3.3.1	Submit open bid to vendors						X	X														
SO4.4	**Establish a mechanism for information sharing to support decision making**																					
4.4.1	Capacitate Central M&E and Data Managers through exposure																					
4.4.1.1	Recruit local staff through a Competitive Biding						X															
4.4.2	Train County M&E Officers and Data Managers to use the software																					
4.4.2.1	Identify Facilitators and Venue for the Training						X															
4.4.2.2	Organize and identify participants from District levels						X															
4.4.3	Conduct Annual M&E Review meeting involving all M&E, Data Managers and Data Clerks						X				X				X				X			
4.4.3.1	Identify Key indicator standard for Data Quality Assurance					X				X				X				X				
4.4.3.2	Identify Key Staff to participate in the Annual Review					X				X				X				X				
4.4.3.3	Identify Facilitator and conclude on remuneration						X				X				X				X			
4.4.3.4	Identify Site and Logistics						X				X				X				X			
4.4.4	Train M&E Officers and Data Managers on the usage of the software at County and District levels																					
4.4.4.1	1. Identify Facilitators and Venue for the Training						X															

SO 4.5	**Strengthen the response and control of epidemic prone NTDs**																				
4.5.1	1. Establish response teams in counties and districts																				
4.5.2	2. Establish coordination and reporting mechanism						X														
4.5.3	Establish surveillance and response teams in all the counties						X														
SO 4.6	**Improve operational research, documentation and evidence to guide innovative approaches to NTDs program interventions**																				
4.6.1	**Coordinate, Facilitate and conduct operational research**																				
4.6.1.1	Liaise with research institutions/individuals					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
4.6.1.2	Facilitate, obtaining the ethical/administrative clearance					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
4.6.1.3	Plan and conduct research					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
4.6.2	**Share and use research findings**																				
4.6.2.1	Present key findings and challenges of activities at National and International meetings								X				X				X				X
4.6.2.2	Publication in peer review journals					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
4.6.2.3	Use research findings for decision making.					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
SO 4.7	**SO 4.7 Establish Integrated Data Management Systems and strengthen NTDs Program**																				
4.7.1	Establish NTDs data base to manage data at all levels																				
4.7.1.1	Identify a Consultant Firm to Design and Install Software at all levels of NTDs					X															
4.7.1.2	Procure the software License and Authority					X	X														
4.7.1.3	Procure gadgets for the software					X	X														
SO 4.8	**SO4.8 Integrate NTDs into the National pharmaco-vigilance system**																				
4.8.1	conduct pharmaco-vigilance																				
4.8.1.1	Monitor for side effect		X	X			X	X			X	X			X	X			X	X	

	during MDA																			
4.8.2	Conduct Data Quality Assessment at all levels of NTDs																			
4.8.2.1	1. Prepare standard procedures for Data Quality and Assurance		X	X		X	X		X	X		X	X		X	X		X	X	
4.8.2.2	2. Design TOR and Objectives		X	X		X	X		X	X		X	X		X	X		X	X	
4.8.2.3	3. Identify Key indicator standard for Data Quality Assurance		X	X		X	X		X	X		X	X		X	X		X	X	
			X	X		X	X		X	X		X	X		X	X		X	X	

The NTDs Program has developed indicators based on priorities and available resources. Baselines are available for some indicators, but for those without baseline values, mechanisms will be established for collecting relevant data. Monitoring and evaluation plan will be developed in line with MOH HMIS and other non-health sector partners to track NTDs Master Plan. Indicators will be developed at the level of input, process, output and outcome that can be used to monitor progress of the various interventions. Emphasis will be laid on collection of data based on drug coverage, parasitological and morbidity indicators of outcome and impact at the national level.

In order to monitor and evaluate the progress and implementation of NTDs programs overtime, the following targets have been set to guide program planning and implementation: The baseline year for setting targets is 2015/2016.

3.8. POST INTERVENTION SURVEILLANCE AND INTEGRATION WITHIN PRIMARY HEALTH FACILITIES

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.

- Describe activities that will be implemented as part of surveillance for each of the NTDs targeted in this plan.

- Further, describe activities -planned prior to the start of interventions that will ensure that surveillance and residual intervention activities are incorporated in routine health care delivery.

Please itemize these activities and related resource needs in table below:

Table 20: Activities for surveillance and sustainability

Obj. No	Objectives / Activities/indicator	2016				2017				2018				2019				2020			
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
	Strategic Objective : Strengthen monitoring and evaluation through regular programmatic activities per NTD																				
1.1	Monitor and evaluate LF																				
1.1.1	Conduct Sentinel sites surveillance prior to every MDA		X	X			X	X			X	X			X	X			X	X	
1.1.2	Treatment/Coverage survey post MDA annually				X				X				X				X				X
1.1.3	Transmission assessment survey in					X	X														
1.2	Monitor and evaluate for SCH/STH			X	X			X	X			X	X			X	X			X	X
1.2.1	Sentinel site survey prior to MDA beginning Nov 2016 and subsequent MDA's				X			X	X			X	X			X	X			X	X
1.2.2	Coverage survey post MDA				X				X				X				X				X
1.2.3	WHO DQA				X				X				X				X				X
1.3	Monitor and evaluate Leprosy																				
1.3.1	ANCDR				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
1.3.2	Treatment completion rate				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
1.3.3	Gender ratio				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
1.3.4	MB:PB				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
1.3.5	Child cases				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
1.3.6	Disability proportion among new cases				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
1.3.7	Nerve damage				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
1.4	Monitor and evaluate BU																				
1.4.1	Number of cases				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
1.4.2	Age distribution				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
1.4.3	Treatment completed				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
1.4.4	Cases with healed wounds				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

1.4.5	For grafts and grafts done				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
1.4.6	Cases of contracture and deformity				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
1.5	Monitor and evaluate Onchocerciasis																				
1.5.1	Sentinel site follow up in SE and SW										X	X			X	X					
1.5.2	Entomological survey NW																				
1.5.3	Entomological SW and SE														X	X			X	X	
1.5.4	Annual coverage survey			X				X				X				X				X	
1.6	Monitor and evaluate Rabies					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

BUDGET JUSTIFICATION AND ESTIMATES

SUMMARY BUDGET

Activities and Sub-activities	Total budget (CFA)	Contribution		Gap
		Country	Partners	
3. Scale-up Interventions				
Mapping	54,156	0	0	54,156
Mass Drug Administration	1,146,923	0	0	1,146,923
Procurement of medicine (PC)	3,301,726	0	0	3,301,726
Procurement of medicine (CM)	490,642	0	0	490,642
Case/Morbidity management & disability prevention	328,572	0	0	328,572
Vector and Environmental Measurement	-	0	0	0
Capacity Strengthening at National HQs	203,282	0	0	203,282
Infrastructure & Logistics	704,010	0	0	704,010
Total 3	**6,229,311**	**-**	**-**	**6,229,311**
2. Planning and Resource Mobilization				
Strategic and operational planning	1,666,419	0	0	1,666,419
Resource Mobilization Initiatives	-	0	0	0
Integration & Linkages of Plans & Budgets	17,230	0	0	17,230
Update of Policies, Guidelines & Tools	34,160	0	0	34,160
Total 2	**1,717,809**	**-**	**-**	**1,717,809**
1. Coordination, Partnership & Advocacy				
Coordination Mechanisms	268,660	0	0	268,660
Strengthening & Fostering Partnerships	225,230	0	0	225,230
High-level Review Meetings	186,774	0	0	186,774
Advocacy and Communication	419,652	0	0	419,652
Total 1	**1,100,316**	**-**	**-**	**1,100,316**
4. M&E, Research				
Monitoring, Supervision & Evaluation	650,304	0	0	650,304
Disease surveillance, response & control	254,946	0	0	254,946
Operational research	57,870	0	0	57,870
Data management	157,847	0	0	157,847
Total 4	**1,120,967**	**-**	**-**	**1,120,967**
GRAND TOTAL	**10,168,403**	**-**	**-**	**10,168,403**

ANNEX

PART I SITUATION ANALYSIS

Annex 1.1: Number of health facilities by county

County	Clinic	Health Center	Hospital	Grand Total
Bomi	23		1	24
Bong	38	1	3	42
Gbarpolu	14		1	15
Grand Bassa	26	1	3	30
Grand Cape Mount	28	2	1	31
Grand Gedeh	21	2	1	24
Grand Kru	14	4	1	19
Lofa	52	3	4	59
Margibi	38	5	2	45
Maryland	21	2	1	24
Montserrado	239	19	12	270
Nimba	63	4	5	72
River Gee	16	3		19
Rivercess	18		1	19
Sinoe	33		1	34
Grand Total	**644**	**46**	**37**	**727**

Annex 1.2: National population data, schools, and health facilities at county level

Counties	Number of districts	No. of villages / communities	Total Population[14]	Pre SAC (12%)	5-14 years (26%)	No. Primary schools[15]	No. Early childhood educati	No. Health facilities[16]
Bomi	*4*	*394*	99,334	11,920	25,827	*99*	*98*	24
Bong	*8*	*516*	393,801	47,256	102,38	*283*	*256*	42
Gbarpolu	*5*	*195*	98,471	11,817	25,603	*106*	*100*	15
Grand	*7*	*405*	261,793	31,415	68,066	*187*	*150*	30
Grand	*5*	*535*	150,061	18,007	39,016	*136*	*128*	31
Grand	*6*	*185*	147,914	17,750	38,458	*105*	*86*	24
Grand Kru	*5*	*157*	68,389	8,207	17,781	*111*	*95*	19
Lofa	*6*	*715*	326,943	39,233	85,005	*264*	*235*	59
Margibi	*4*	*436*	247,894	29,747	64,452	*153*	*143*	45
Maryland	*6*	*232*	160,527	19,263	41,737	*98*	*81*	24
Montserra	*7*	*429*	1,320,50	158,46	343,33	*445*	*412*	270

[14] 2016 Population data extrapolated from the 2008 population and housing census of the Republic of Liberia: analytic report on population size and composition. The Number of health facilities and primary schools are derived from the Liberia DHIS,

[15] Education statistics for the Republic of Liberia: National statistics booklet 2013.

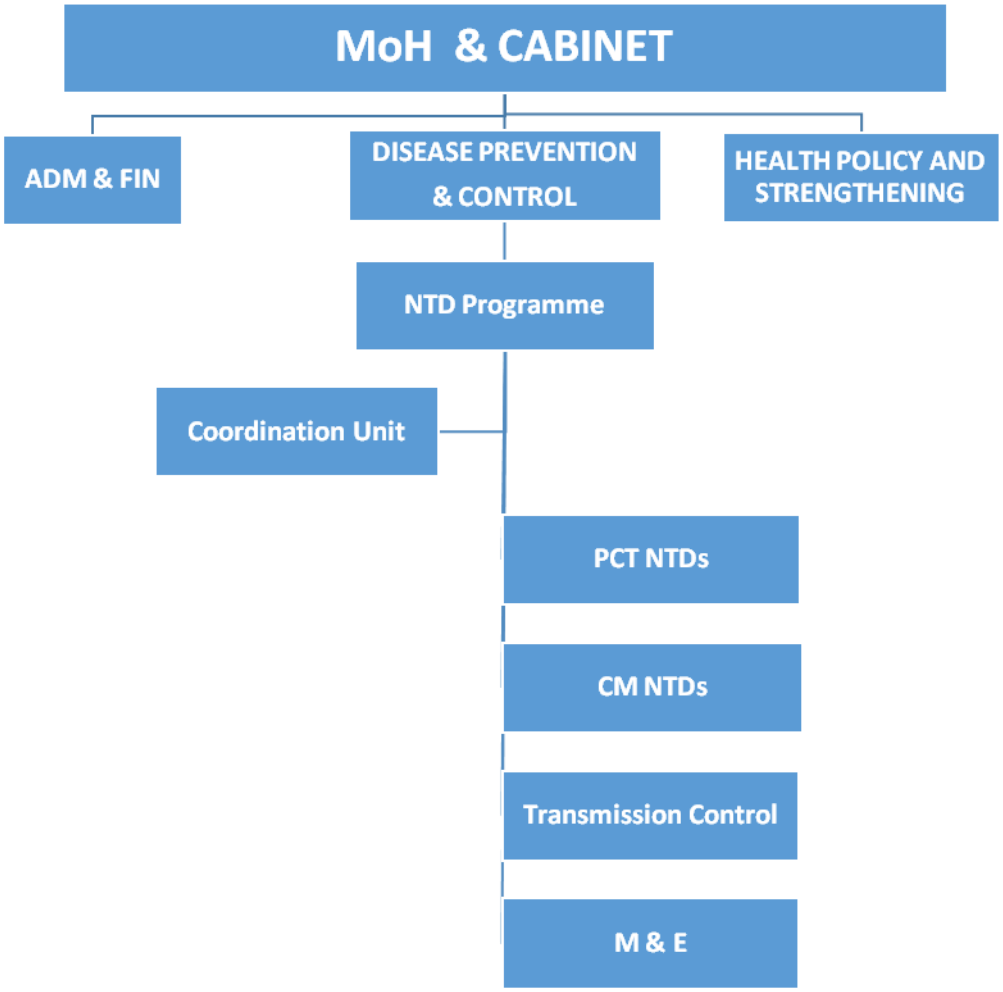
[16] Liberia's health facility master list, 2015. Ministry of Health

Nimba	*6*	*551*	545,598	65,472	141,85	*462*	*447*	72
River Gee	*6*	*128*	78,870	9,464	20,506	*98*	*93*	19
Rivercess	*6*	*483*	84,444	10,133	21,955	*98*	*97*	19
Sinoe	*10*	*298*	120,287	14,434	31,275	*125*	*122*	34
MCSS	-	-	-	-	-	*1*	*15*	-
National	***91***	***1461***	***4,104,83***	***492,58***	***1,067,2***	***2,785***	***2,544***	**727**

Annex 1.3: Distances between main cities and district headquarters of the country in Km

Capital City							
340	**Town1**						
100	240	**Town2**					
350	690	450	**Town3**				
230	570	330	400	**Town4**			
170	470	320	250	330	**Town5**		
300	470	400	325	250	240	**Town6**	
350	550	300	200	150	150	400	**Town7**

Annex 1.4: Organisational chart of the MoH and the NTD National Programme



Annex 1.5: Summary on available data of PCT-NTD distribution

Province or region	County or community*	Lymphatic Filariasis	Onchocerciasis	Schistosomiasis	STH	Yaws	Loa loa
Province or Region 1 Northwest	County Bong	Yes	Yes	Yes	Yes	ND	ND
	County 1.2 Gbarpolu	No	Yes	Yes	Yes	ND	ND
	County1.3 Lofa	Yes	Yes	Yes	Yes	ND	ND
	County 1.4 Montserrado	Yes	Yes	Yes	Yes	ND	ND
	County 1.5 Nimba	Yes	Yes	Yes	Yes	ND	ND
Province or Region 2 Southwest	County 2.1 Rivercess	Yes	Yes	Yes	Yes	ND	ND
	County 2.2Grand Bassa	Yes	Yes	Yes	Yes	ND	ND
	County 2.3 Grand Capemount	Yes	Yes	Yes	Yes	ND	ND
	County 2.4 Margibi	Yes	Yes	Yes	Yes	ND	ND
	County 2.5 Bomi	NO	Yes	Yes	Yes	ND	ND
Province or Region 3 Southeast	County 3.1 Grand Gedeh	Yes	Yes	Yes	Yes	ND	ND
	County 3.2 Grand Kru 3.2	Yes	Yes	Yes	Yes	ND	ND
	County 3.3 Maryland	Yes	Yes	Yes	Yes	ND	ND
	County 3.4 River Gee	Yes	Yes	Yes	Yes	ND	ND
	County 3.5 Sinoe	Yes	Yes	Yes	Yes	ND	ND
Total Region or Province 3	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 1.6: Summary on available data on CM-NTD distribution

Province or region	**District or community***	**Buruli ulcer**	**Yaws**	**HAT**	**Leprosy**	**Rabies**	**Other**
Province or Region 1 Northwest	County 1.1 Bong	Yes	ND	ND	Yes	Yes	
	County1.2 Gbarpolu	Yes	ND	ND	Yes	Yes	
	County 1.3 Lofa	Yes	ND	ND	Yes	Yes	
	County 1.4 Montserrado	Yes	ND	ND	Yes	Yes	
	County 1.5 Nimba	Yes	ND	ND	Yes	Yes	
Total Region or Province 2							
Province or Region 1 Southwest	County 2.1 Bomi	Yes	ND	ND	Yes	Yes	
	County 2.2 Grand Bassa	Yes	ND	ND	Yes	Yes	
	County 2.3 Grand Capemount	Yes	ND	ND	Yes	Yes	
	County 2.4 Margibi	Yes	ND	ND	Yes	Yes	

	County 2.5 Rivercess	Yes	ND	ND	Yes	Yes	
Province or Region 3 Southeast	County 3.1 Grand Gedeh	Yes	ND	ND	Yes	Yes	
	County 3.2 Grand Kru	Yes	ND	ND	Yes	Yes	
	County 3.3 Maryland	Yes	ND	ND	Yes	Yes	
	County 3.4 Rivergee	Yes	ND	ND	Yes	Yes	
	County 3.5 Sinoe	Yes	ND	ND	Yes	Yes	
Total Region or Province 3	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 1.8: Summary on status of implementation of PCT NTD interventions in counties

Province or region	District or community*	Lymphatic Filariasis	Onchocerciasis	Schistosomiasis	STH	Trachoma	Loa loa**
Province or Region 1 Northwest	County 1.1 Bong	PCT1	PCT1	PCT 3	PCT 1	ND	ND
	County1. 2 Gbarpolu	No	PCT1	PCT3	PCT 1	ND	ND
	County1. 3 Lofa	PCT1	PCT1	PCT3	PCT 1	ND	ND
	County 1.4 Montserrado	PCT1	PCT1	PCT3	PCT 1	ND	ND
	County 1.5 Nimba	PCT1	PCT1	PCT3	PCT 1	ND	ND
Total Region or Province 2							
Province or Region 1 Southwest	County 2.1 Bomi	NO	PCT1	PCT3	PCT 1	ND	ND
	County2. 2 Grand Bassa	PCT1	PCT1	PCT3	PCT 1	ND	ND
	County2. 3 Grand Cape Mount	PCT1	PCT1	PCT3	PCT 1	ND	ND
	County 2.4 Margibi	PCT1	PCT1	PCT3	PCT 1	ND	ND
	County 2.5 Rivercess	PCT1	PCT1	NO	PCT 1	ND	ND
Province or Region 3 Southeast	County3. 1 Grand Gedeh	PCT1	PCT1	PCT3	PCT 1	ND	ND
	County3. 2 Grand Kru	PCT1	PCT1	NO	PCT 1	ND	ND
	County 3.3 Maryland	PCT1	PCT1	PCT3	PCT 1	ND	ND
	County	PCT1	PCT1	PCT3	PCT	ND	ND

	3.4 River Gee				1		
	County 3.5 Sinoe	PCT1	PCT1	PCT3	PCT 1	ND	ND
Total Region or Province 3	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) = 1st round of MDA1 (IVM+ALB), T2 (3) = 3rd round of T2 (PZQ in SAC), CDTI (7) =7th round of IVM in communities for Onchocerciasis

** Loa loa is only for mapping

Annex 1.8: Summary on status of implementation of CM interventions in Counties

Province or region	District or community*	Buruli ulcer	Yaws	HAT	Leishmaniasis	Leprosy	Rabies	Other
Province or Region 1 Northwest	County1.1 Bong	CM 2	ND	ND	ND	CM2	CM1	
	County 1.2 Gbarpolu	ACF	ND	ND	ND	ACF	CM1	
	County1.3 Lofa	CM2	ND	ND	ND	CM2	CM1	
	County 1.4 Montserrado	ACF	ND	ND	ND	ACF	CM1	
	County 1.5 Nimba	CM2	ND	ND	ND	CM2	CM1	
Total Region or Province 2								
Province or Region 1 Southwest	County2.1 Bomi	ACF	ND	ND	ND	ACF	CM1	
	County 2.2 Grand Bassa	ACF	ND	ND	ND	ACF	CM1	
	County2.3 Grand Cape mount	ACF	ND	ND	ND	ACF	CM1	
	County 2.4 Margibi	ACF	ND	ND	ND	ACF	CM1	
	County 2.5 Rivercess	ACF	ND	ND	ND	ACF	CM1	
Province or Region 3 Southeast	County 3.1 Grand Gedeh	ACF	ND	ND	ND	ACF	CM1	
	County 3.2 Grand Kru	ACF	ND	ND	ND	ACF	CM1	
	County3.3 Maryland	ACF	ND	ND	ND	ACF	CM1	
	County 3.4	ACF	ND	ND	ND	ACF	CM1	

	RiverGee							
	County 3.5 Sinoe	ACF	ND	ND	ND	ACF	CM1	
Total Region or Province 3	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

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

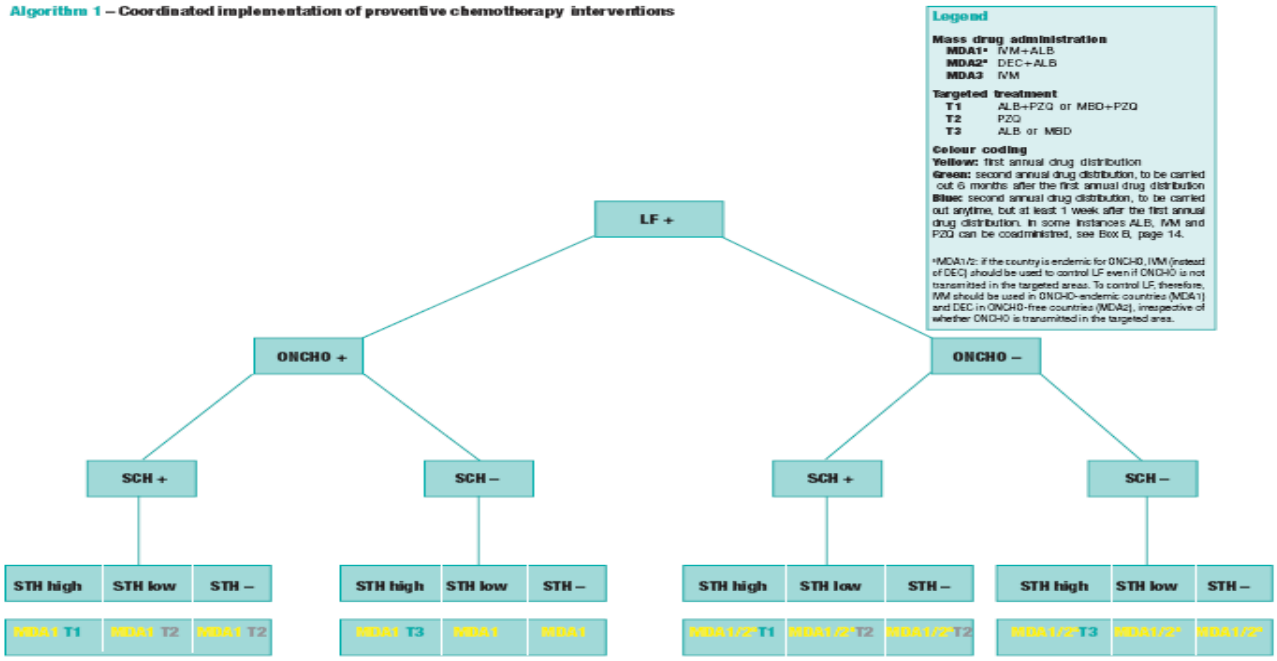
Activity		Lympha	Onchocercia	Schistosomia	STH	Yaws
Programme coordination		X	X	X	X	X
Advocacy		X	X	X	X	X
Resource mobilization		X	X	X	X	X
Social mobilization		X	X	X	X	X
Training		X	X	X	X	X
Mapping		X	X	X	X	X
Drug distribution	CDTI	X	X	X	X	X
	School			X	X	
	MDA campaign	X		X	X	X
	Child health day				X	X
	Immunization			X	X	X
	Health and	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

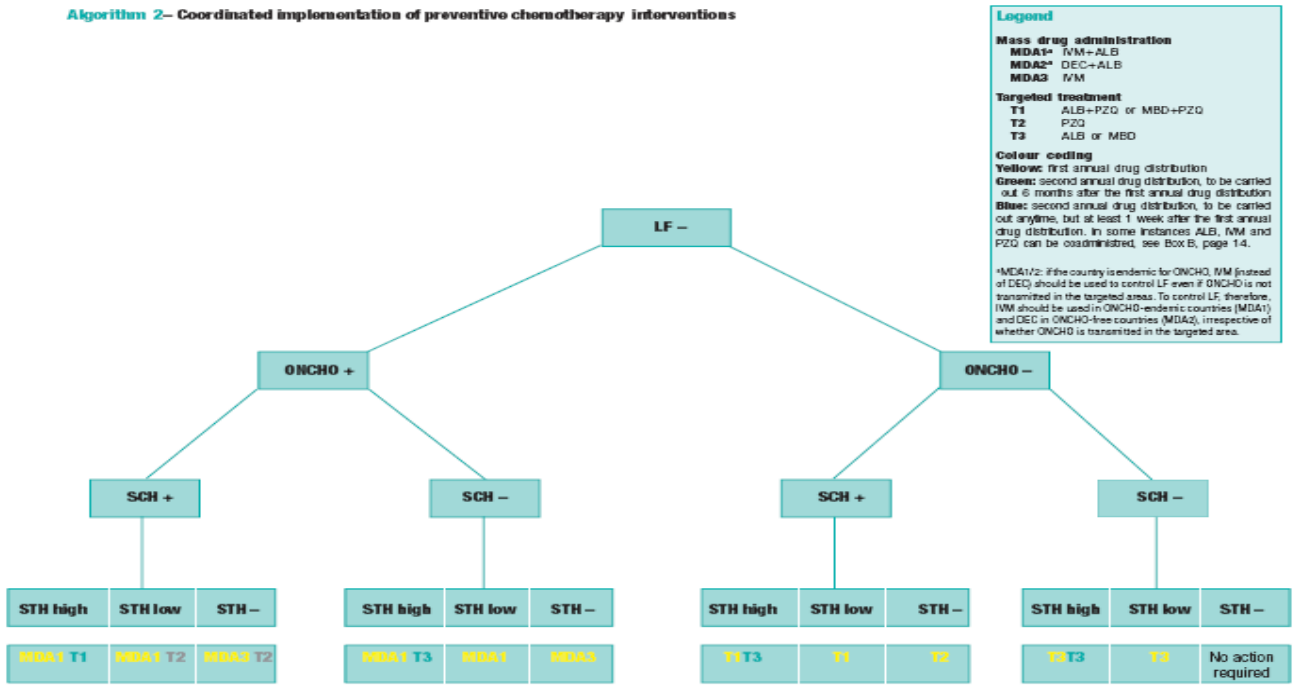
Key interventions	Diseases / conditions						
	Leprosy	YAWS	BU	Complications LF	Rabies	ECCH	CYST
Advocacy/resource mobilization	X	X	X	X	X	X	X
Strengthening partnership	X	X	X	X	X	X	X
Inter-sectoral collaboration	X	X	X	X	X	X	X
Health promotion	X	X	X	X	X	X	X
Capacity building	X	X	X	X	X	X	X
Mapping	X	X	X	X	X	X	X
Passive case finding	X	X	X	X	X	X	X
Active case finding	X	X	X	X			
Medical treatment	X	X	X	X			
Surgery	X		X	X			
Prevention of disability	X		X	X			

Integrated vector management/ reservoir control							
Surveillance	X	X	X	X	X	X	X

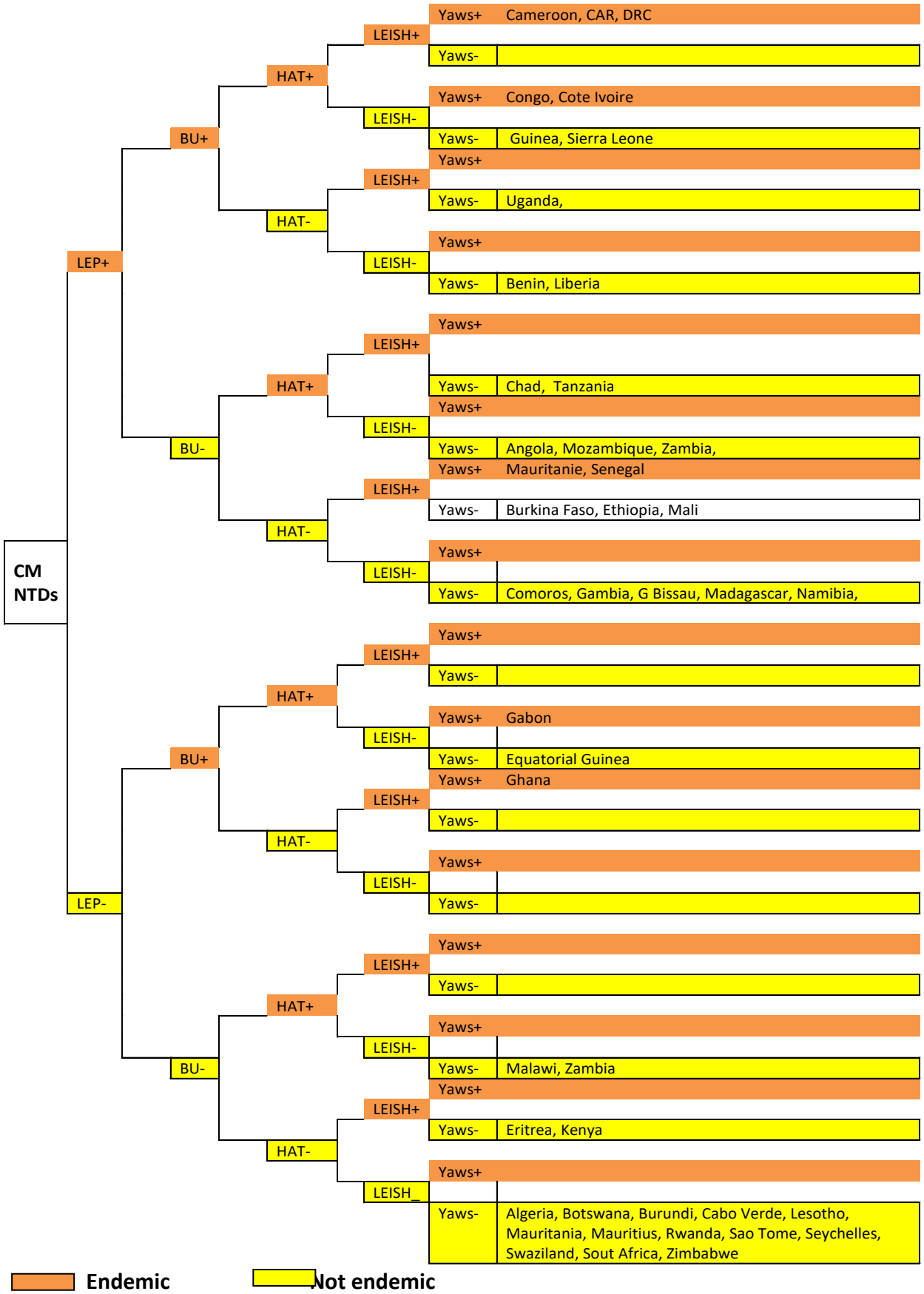
Annex 2. 3: PCT algorithm 1



Annex 2.4: PCT algorithm 2



Annex 2.5: Algorithm for Co-endemicity of CM-NTDs (Leprosy, Buruli ulcer, HAT, Leishmaniasis and yaws) in countries of the WHO African Region



Annex 2.6 Package of Transmission control - vector/reservoir control

Activity	Vectors and Associated NTDs				
	Mosquitoes			Other Vectors	
				Snails	Black fly
	LF	Yellow Fever	Malaria	Schisto	Oncho
ITN	X	X	X		
IRS	X	X	X		
Space spraying					X
Larviciding	X	X	X		X
Traps					
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**	**LEP**	**GW**	**BU**	**Rabies**
Partnership for water supply improvement			X	X		X		
Partnership for sanitation improvement			X	X				
Social mobilization	X	X	X	X	X	X	X	X
Health promotion	X	X	X	X	X	X	X	X
Operational research	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 31									
	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); I**VM**= 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. *Note: for some situations, LF mapping may need to be prioritized and carried out separately.* -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	I. Strengthen coordination mechanisms for the NTD control programme at regional, national and subnational levels in the African Region; II. Strengthen and foster partnerships for the control, elimination and eradication of targeted NTDs at regional, national, district and community levels; 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; IV. Strengthen advocacy, visibility and profile of NTD control elimination and eradication interventions at all levels in the African Region.	• Minutes of high-level NTD coordination meetings in countries; • Minutes of partnership events on NTDs; • Number of high level advocacy events on NTDs; • Number of partners involved in NTD programme.
2 Enhance resource mobilization and planning for results in NTD control	I. Support countries to develop integrated multiyear strategic plans and gender-sensitive annual operational plans for the control, elimination and eradication of targeted NTDs II. Enhance resource mobilization approaches and strategies at regional, national and sub-national levels for NTD interventions III. Strengthen the integration and linkages of NTD programme and financial plans into sector-wide and national budgetary and financing mechanisms IV. Support countries to develop and update national NTD policies and elaborate guidelines and tools to guide effective policy and programme implementation	• Number of countries with updated national integrated NTD strategic plans; • Number of NTD guidelines and NTD planning and implementation tools developed; • Number of countries with adapted national guidelines and tools; • Presence of NTD budget line; • Total amount of financial resources available for NTD activities; • Percentage of planned NTD funds received.
3 Scale up access to interventions, treatment and	I. Scale up an integrated preventive chemotherapy, including access to interventions for lymphatic Filariasis, soil transmitted helminthiasis,	• Number of countries with completed integrated mapping of NTDs; • Drug administration

Strategic priorities	Strategic objectives	Core indicators
NTD service delivery capacity, within the overall health system	onchocerciasis, schistosomiasis and trachoma; II. Scale up integrated case-management-based disease interventions, especially do the following: a. Accelerate leprosy elimination activities; b. Intensify guinea worm eradication and surveillance activities in order to interrupt transmission in the three remaining endemic countries in the shortest time possible; c. Enhance HAT control interventions for human African trypanosomiasis; d. Strengthen national programmes to control Buruli ulcer and endemic treponematosis; e. Strengthen l Leishmaniasis control and human rabies prevention; III. Strengthening integrated vector management for targeted NTDs. 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;	coverage; • National coverage; • Parasitological prevalence; • Percentage of disease-specific targets achieved.
4 Enhance NTD monitoring and evaluation, surveillance and operations research	I. Develop and promote an integrated NTD M&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; II. Strengthen surveillance of NTDs and strengthen response and control of epidemic-prone NTDs, in particular dengue and Leishmaniasis; III. Support operational research, documentation and evidence to guide innovative approaches to NTD programme interventions;	• NTD data completeness and timeliness; • Number of evaluation studies conducted and results disseminated; • Number of operational research studies conducted and results disseminated; • A functional data management system.

Strategic priorities	Strategic objectives	Core indicators
	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.	

ANNEX 3 – Indicators

Annex 3.1: Mass Drug Administration Indicators

Definition of indicator	Baseline	Target	Source	Use of indicator
Geographical coverage (no. Of districts treated/no. Of districts endemic)				
Onchocerciasis		15/15 (100%)	MDA reports	To monitor programme coverage
Schistosomiasis		10/15 (100%)	MDA reports	To monitor programme coverage
Soil Transmitted Helminth		15/15 (100%)	MDA reports	To monitor programme coverage
Lymphatic Filariasis		13/15 (100%)	MDA reports	To monitor programme coverage
Rabies		15/15 (100%)	MDA reports	To monitor programme coverage
Leprosy		15/15 (100%)	MDA reports	To monitor programme coverage
BU		15/15 (100%)	MDA reports	To monitor programme coverage

Total number of people treated/disease/year (MDA)				
Onchocerciasis		N/A	MDA reports	Use to monitor programme coverage
Schistosomiasis		N/A	MDA reports	Use to monitor programme coverage
Soil Transmitted Helminth		N/A	MDA reports	Use to monitor programme coverage
Lymphatic Filariasis		N/A	MDA reports	Use to monitor programme coverage
Rabies		N/A	Treatment Registers	Use to monitor programme coverage
Leprosy		N/A	Treatment Registers	Use to monitor programme coverage
BU		N/A	Treatment Registers	Use to monitor programme coverage
Therapeutic coverage/disease (no. Treated/total population eligible for treatment in implementation unit)				
Onchocerciasis		N/A	MDA reports	Use to monitor programme coverage
Schistosomiasis		N/A	MDA reports	Use to monitor

				programme coverage
Soil Transmitted Helminth		N/A	MDA reports	Use to monitor programme coverage
Lymphatic Filariasis		N/A	MDA reports	Use to monitor programme coverage
Rabies		N/A	Bite to PEP ratio from registers	Use to monitor programme coverage
Leprosy		N/A	Diagnostic to treatment registers	Use to monitor programme coverage
BU		N/A	Diagnostic to treatment registers	Use to monitor programme coverage

ANNEX 4: Facility based Indicators

Definition of indicator	**Baseline**	**Target**	**Source**	**Use of indicator**
Number of health professionals trained on NTD related aspect at the HC during the reporting year	N/A	N/A	**Primary Health Care Reports**	
Medical Doctors	N/A	N/A	**Training Database at Central level**	**Use to maintain high level of quality services and capacity development plan as well as human**

				resource management at district and national levels
Lab. Technicians	N/A	N/A		**Use to maintain high level of quality services and capacity development plan as well as human resource management at district and national levels**
Nurses	N/A	N/A		**Use to maintain high level of quality services and capacity development plan as well as human resource management at district and national levels**
Physicians Assistants	N/A	N/A		**Use to maintain high level of quality services and capacity development plan as well as human resource management at district and national levels**
Midwives	N/A	N/A		**Use to maintain high level of quality services and capacity development plan as well as human resource management at district and national levels**
Pharmacist	N/A	N/A		**Use to maintain high level of quality services and capacity development plan as well as human resource management at district and national levels**

Number of support staff trained in NTD activities				
CHWS/CDD	N/A	N/A	**County Treatment reports**	**Use to maintain high level community-based of quality service**
Teachers	N/A	N/A	**County Treatment reports**	**Use to maintain high level community-based of quality service**
Number of Lab. Confirmed cases/disease/year/age/geographical area				
Onchocerciasis	N/A	N/A	**HIS**	**Use to monitor disease trends, forecast NTD drugs, reagents and supplies**
Schistosomiasis	N/A	N/A	**HIS**	**Use to monitor disease trends, forecast NTD drugs, reagents and supplies**
Soil Transmitted Helminth	N/A	N/A	**HIS**	**Use to monitor disease trends, forecast NTD drugs, reagents and supplies**
Lymphatic Filariasis	N/A	N/A	**HIS**	**Use to monitor disease trends, forecast NTD drugs, reagents and supplies**
Rabies	N/A	N/A	**HIS**	**Use to monitor disease trends, forecast NTD drugs, reagents and supplies**
Leprosy	N/A	N/A	**HIS**	**Use to monitor disease trends, forecast NTD drugs, reagents and supplies**
BU	N/A	N/A	**HIS**	**Use to monitor disease trends, forecast NTD drugs, reagents and**

				supplies
Number of health facilities that reported stock out of Praziquantel & Albendazole/ Mebendazole				
Albendazole	N/A	N/A	**HIS**	**Use to monitor drug stock management and forecast**
Rabies Vaccine	N/A	N/A	**HIS**	**Use to monitor drug stock management and forecast**
MDT	N/A	N/A	**HIS**	**Use to monitor drug stock management and forecast**
Strepto	N/A	N/A	**HIS**	**Use to monitor drug stock management and forecast**
Clarithromycin	N/A	N/A	**HIS**	**Use to monitor drug stock management and forecast**
Rifampicin	N/A	N/A	**HIS**	**Use to monitor drug stock management and forecast**
Number of diseases treated				
Onchocerciasis	N/A	N/A	**HIS**	**Use to monitor trends in cases**
Schistosomiasis	N/A	N/A	**HIS**	**Use to monitor trends in cases**
Soil Transmitted Helminth	N/A	N/A	**HIS**	**Use to monitor trends in cases**
Lymphatic Filariasis	N/A	N/A	**HIS**	**Use to monitor trends in cases**
Rabies	N/A	N/A	**HIS**	**Use to monitor trends in cases**
Leprosy	N/A	N/A	**HIS**	**Use to monitor trends in cases**
BU	N/A	N/A	**HIS**	**Use to monitor trends in cases**

ANNEX X. Impact Indicators

Definition of Indicator	Baseline	Target	Source	Use of indicator
Schistosomiasis and STH				
Prevalence of STH infection	N/A	N/A	**Sentinel Site Survey**	**Use to monitor disease trends and for review of treatment strategies and programme goal**
Mean intensity of STH infection	N/A	N/A	**Sentinel Site Survey**	**Use to monitor disease trends and for review of treatment strategies and programme goal**
Prevalence of S. mansoni infection	N/A	N/A	**Sentinel Site Survey**	**Use to monitor disease trends and for review of treatment strategies and programme goal**
Mean intensity of S. mansoni infection	N/A	N/A	**Sentinel Site Survey**	**Use to monitor disease trends and for review of treatment strategies and programme goal**
Prevalence of S. haematobium infection	N/A	N/A	**Sentinel Site Survey**	**Use to monitor disease trends and for review of treatment strategies and programme goal**
Mean intensity of S.	N/A	N/A	**Sentinel Site Survey**	**Use to monitor disease trends and for review of**

haematobium infection				**treatment strategies and programme goal**
Prevalence of haematuria	N/A	N/A	**Sentinel Site Survey**	**Use to monitor disease trends and for review of treatment strategies and programme goal**
Lymphatic Filariasis				
Prevalence of micro filareamia	N/A	N/A	**Sentinel Site Survey**	**Use to monitor disease trends and for review of treatment strategies and programme goal**
Mean Intensity of micro filareamia	N/A	N/A	**Sentinel Site Survey**	**Use to monitor disease trends and for review of treatment strategies and programme goal**
Rate of new lymphodema cases	N/A	N/A	**HIS?**	**Use to monitor disease trends and for review of treatment strategies and programme goal**
Rate of new hydrocele cases	N/A	N/A	**HIS?**	**Use to monitor disease trends and for review of treatment strategies and programme goal**
Percentage of Mosquito infected with	N/A	N/A	**Mosquito collection and molecular analysis**	**Use to monitor disease trends and for review of treatment strategies and**

bancrofti				**programme goal**
Proportion of households with bed nets	N/A	N/A	**County bed net distribution register**	**To monitor areas in need of additional interventions**
Onchocerciases				
Prevalaence of mf	N/A	N/A	**Sentinel Site Survey**	**Use to monitor disease trends and for review of treatment strategies and programme goal**
Nodule rate	N/A	N/A	**Sentinel Site Survey**	**Use to monitor disease trends and for review of treatment strategies and programme goal**
Vector infectivity	N/A	N/A	**Sentinel Site Survey**	**Use to monitor transmission rate**
Leprosy				
Attendance rate at health facility	N/A	N/A	**Attendance and treatment registers**	**Use to monitor disease trends and for review of treatment strategies and programme goal**
Treatment completion rate	N/A	N/A	**Attendance and treatment registers**	**Use to monitor treatment strategies and programme goal**
Disability rate at discharge	N/A	N/A	**Attendance and treatment registers**	**Use to monitor treatment strategies and programme goal**
BU				

Percentage of BU cases that are category one	N/A	N/A	**Attendance and treatment registers**	**Use to monitor treatment strategies and programme goal**
Percentage of BU cases healed without disability	N/A	N/A	**Attendance and treatment registers**	**Use to monitor treatment strategies and programme goal**
Rabies				
Number of animal bites	N/A	N/A		**Use to monitor disease trends and for review of treatment strategies and programme goal**
Number of vaccines administered	N/A	N/A		**Use to monitor disease trends and for review of treatment strategies and programme goal**