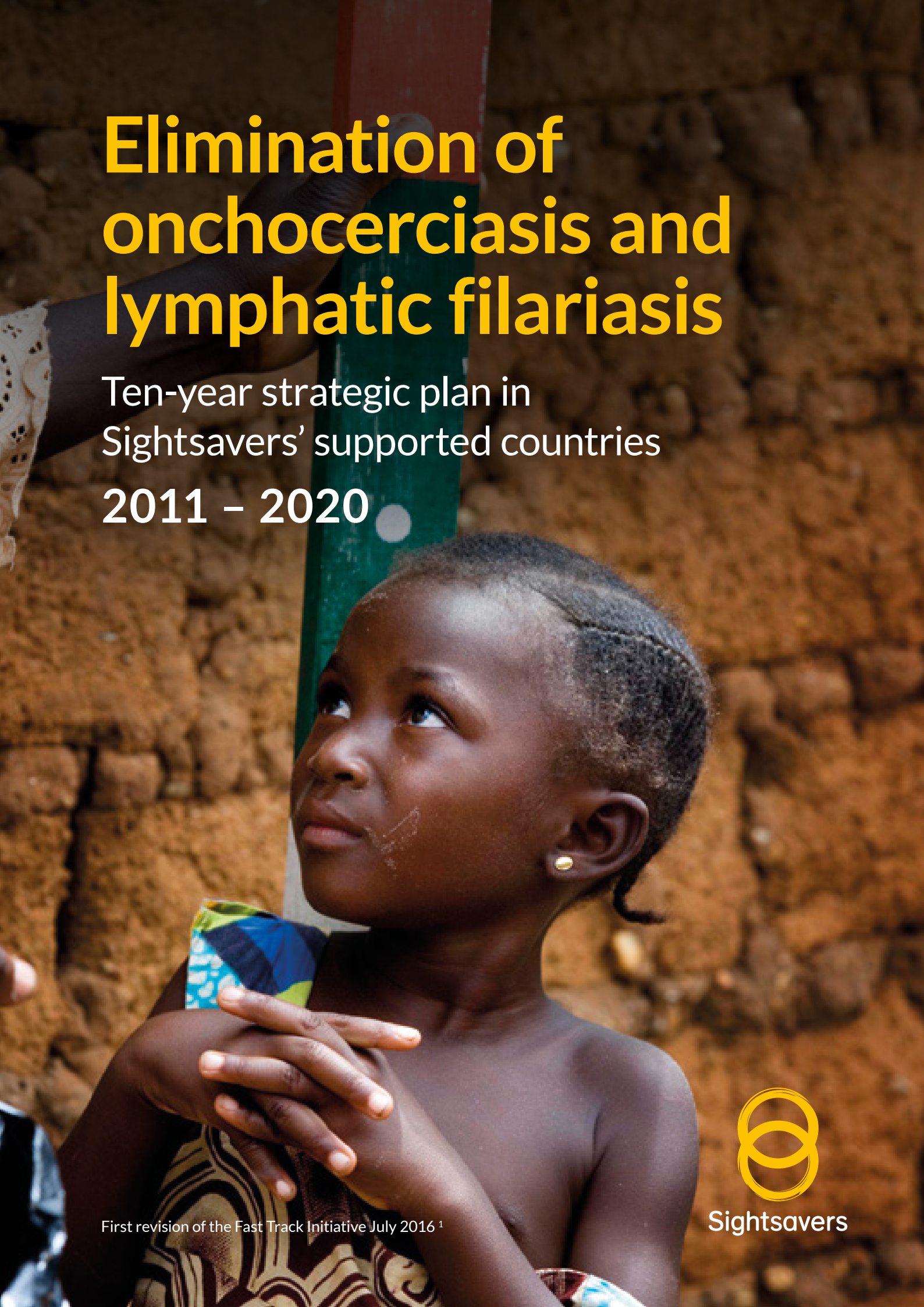

Elimination of onchocerciasis and lymphatic filariasis

Ten-year strategic plan in Sightsavers' supported countries

2011 – 2020

First revision of the Fast Track Initiative July 2016 [1]

Sightsavers

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Front cover image:

Patience Muntari is measured before being given her Mectizan® Treatment in Kachia, in Kaduna State, Nigeria.

[1] First version (2011) written by Johnson Ngorok with strategic direction, final review, write up and edit provided by Simon Bush, and revision and LF addition (2015) by Elizabeth Elhassan

List of acronyms

AOP	Annual Operational Plan
APOC	African Programme for Onchocerciasis Control
APR	Annual Project Report
ATP	Annual Transmission Potential
CAR	Central African Republic
CBM	Christoffel Blinden Mission
CBO	Community Based Organisation
CBR	Community Based Rehabilitation
CDD	Community Directed Distributor
CDI	Community Directed Intervention
CDTI	Community Directed Treatment with Ivermectin
CRS	Catholic Relief Services
CSA	Committee of Sponsoring Agencies
CSM	Community Self Monitoring
DALYs	Disability Adjusted Life Years
DfID	Department for International Development
DMDI	Disease Management and Disability Inclusion
DRC	Democratic Republic of Congo
ESPEN	Expanded Special Project to Eliminate NTDs
EU	Evaluation Unit
FLHF	Front Line Health Facility
F&M	Funding and Marketing
FTI	Fast Track Initiative
GAELF	Global Alliance to Eliminate Lymphatic Filariasis
GCR	Geographical Coverage Rate
GHI	Global Health Initiative
GPELF	Global Programme to Eliminate Lymphatic Filariasis
HKI	Helen Keller International
HR	Human Resources
HSAM	Health Education, Sensitisation, Advocacy & Mobilisation
IFM	Institutional Funding Manager
IU	Implementation Unit
IMA	Inter-church Medical Association
JAF	Joint Action Forum
LCIF	Lions Club International Foundation
LF	Lymphatic Filariasis
MCH	Maternal & Child Health
MDG	Millennium Development Goal
MDA	Mass Drug Administration
MDP	Mectizan® Donation Program
MDSC	Multi Disease Surveillance Centre
MITOSATH	Mission to Save the Helpless

M&E	Monitoring & Evaluation
mf	microfilaria
MOH	Ministry of Health
NGDO	Non-Governmental Development Organisation
NGO	Non-Governmental Organisation
NOCP	National Onchocerciasis Control Programme
NOTF	National Onchocerciasis Task Force
NTD	Neglected Tropical Disease
OCP	Onchocerciasis Control Programme
OEPA	Onchocerciasis Elimination Programme for the Americas
OPC	Onchocerciasis Control Programme (French version)
PCT	Preventive Chemotherapy
PHC	Primary Health Care
PTS	Post Treatment Surveillance
RAPLOA	Rapid Assessment of Loa
RGO	Regional Grant Officer
REMO	Rapid Epidemiological Mapping of Onchocerciasis
RPRG	Regional Programme Review Group
SAE	Severe Adverse Effects
SDG	Sustainable Development Goal
SHM	Stakeholders Meetings

SMT	Senior Management Team
SSOTF	South Sudan Onchocerciasis Task Force
STH	Soil Transmitted Helminths
STAG-NTD	Strategic and Technical Advisory Group for NTD
SWOT	Strength, Weaknesses, Opportunities, Threats
TAS	Transmission Assessment Surveys
TCC	Technical Consultative Committee
TCR	Therapeutic Coverage Rate
TDR	Research & Training in Tropical Diseases
UFAR	United Front Against River Blindness
UN	United Nations
UNICEF	United Nations Children's Fund
UNOEP	Uganda National Onchocerciasis Elimination Programme
UNOETF	Uganda National Onchocerciasis Elimination Task Force
USAID	United States Agency for International Development
UTG	Ultimate Treatment Goal
WHO	World Health Organisation
WHO/ AFRO	World Health Organisation Regional Office for Africa

Dedication

The Sightsavers' ten year strategic plan for onchocerciasis is dedicated to:

Aboubacar Ouattara

1st January 1953 – 19th July 2011

Acknowledgements

The first FTI (2011) was written by Johnson Ngorok with strategic direction from Simon Bush. Elizabeth Elhassan wrote a revision of this in 2016, which included an LF addition. It also received a final review by Simon Bush.

Several people contributed to the review of the document including Dr Adrian Hopkins and Dr Yao Sodahlon (Mectizan® Donation Program), Prof David Molyneux, Prof Moses Bockarie and Joan Fahy (Liverpool School of Tropical Medicine), Dr Patrick Lammie (Centers for Disease Control), Dr Dirk Engels, Dr Jonathan King (WHO NTDs Headquarters), Prof Njeri Wamae (RCG Chair, Global Alliance to Eliminate Lymphatic Filariasis), Dr Mwele Malecela (National Institute for Medical Research, Tanzania), Prof Adenike Abiose (Chair Nigeria NTDs Steering Committee), Dr Uche Amazigo (former Director of APOC and Trustee of Sightsavers), Professor Ekanem Braide (Vice Chancellor, Federal University, Lafia, Nigeria and Trustee of Sightsavers), Dr Franca Olamiju (MITOSATH) and Chukwu Okoronkwo (FMOH, Nigeria).

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To Simon Bush, Directors of NTDs at Sightsavers, for his confidence and Caroline Harper, Chief Executive of Sightsavers, for her keen interest and support in the elimination NTDs.

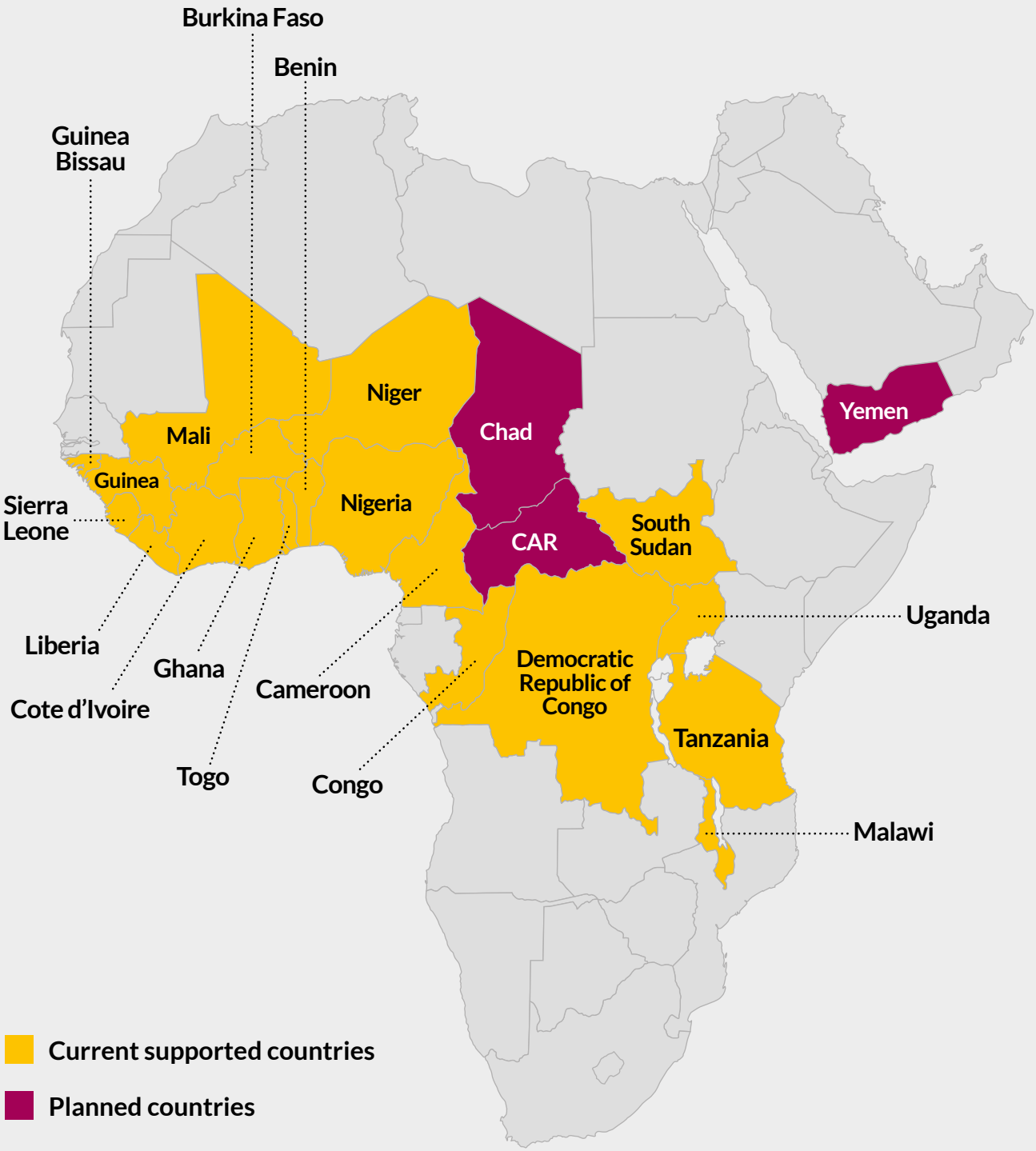
This document is dedicated to the memory of Aboubacar (Baba) Ouattara who contributed in the early days of the development of the first version of the fast track concept.

Dr Elizabeth Elhassan
Technical Director NTDs

Quote from Mectizan® Donation Program

> Tools are available to achieve what is now the realistic goal of the elimination of River Blindness in most of Africa in the next 10 years. What is required is the vision and dedication of many partners, working with governments, to implement these very practical strategies, working within the framework of the national plans for Neglected Tropical Diseases. Sightsavers with this initiative are leading the way. This is a great plan and it deserves full support. The medicine is available, the partnerships are developed and hopefully this plan will encourage others to bring resources to the table in order to rid Africa of this disabling disease by 2025.

Evans shows us his Mectizan®, which he has just been administered. He is from Gyankobaa, which is in the Ashanti region of Ghana.



Map 1: Sightsavers' current supported and planned countries

Executive summary

Much has happened in the field of neglected tropical diseases since the first editions of our fast track initiatives were issued in 2011. A testament to that is that our work on onchocerciasis has been integrated with lymphatic filariasis. This ten year strategic plan now covers both diseases.

Elizabeth Elhassan, our Technical Director and lead on onchocerciasis and lymphatic filariasis, has taken the first edition of our plan , authored by Johnson Ngorok and myself, and revised it to take into account, for example, the guidelines on disease elimination for both onchocerciasis and lymphatic filariasis. My thanks go to Elizabeth for completely revising our first edition and making it more relevant to the elimination agenda and the integrated approach to neglected tropical diseases programmes.

In 2015 Sightsavers supported 143 million NTD treatments[2]. The scale up of treatments has happened, but the treatment gap across Africa remains stubbornly high.

It was only in 2010 that we recorded our first non-blinding NTD treatment, lymphatic filariasis (LF), followed by schistosomiasis and soil transmitted helminths (STH) in 2011 in our output statistics[3].

Our ten year strategic plan for onchocerciasis/lymphatic filariasis and trachoma frame our technical response to these NTDs within an overall treatment strategy for scale-up of all the preventative chemotherapy diseases.

Our ten year strategic plan projects and all individual NTD projects work to agreed WHO's criteria for disease elimination and our in-country work fits within the approved WHO NTD Master Plans for Neglected Tropical Diseases. These criteria formed the basis of a NTD strategic alignment process that took place in the last quarter of 2015.

The late Aboubacar (Baba) Ouattara contributed in the early days of the development of this fast track concept. This programme is dedicated to his memory.

Simon Bush
Director NTDs

[2] In 2015, Sightsavers supported over 100 million NTD treatments for the second year in a row, despite the effect of Ebola in Sierra Leone, Liberia and Guinea Conakry and supply chain issues which resulted in late delivery of some of the medicines needed as part of our supported mass drug administration programmes.

[3] We were undertaking small-scale LF work as early as 2007. The Royal Charter was changed in 2009 to enable us to scale up LF work and other NTDs.

1.0 Introduction

1.1 Background

Sightsavers works with endemic communities and partners in developing countries to eliminate avoidable blindness and neglected tropical diseases (NTDs) and promote equality of opportunity for people with disabilities. Therefore our work on River Blindness is core to our mandate.

The current programme of work outlined in the organisation's Strategic Implementation Card includes prioritising investment in scalable cost-effective approaches to eye health, social inclusion, developing effective partnerships, ensuring quality programmes, establishing strong strategic alliances and networks, ensuring adequate technical expertise and gathering sound research and evidence; all of which are relevant for the onchocerciasis and lymphatic filariasis (LF) programmes.

In 2009 Sightsavers expanded activities to include other NTDs (LF, schistosomiasis and soil transmitted helminths) not just blinding diseases. In 2010 the Board of Trustees and Strategic Management Team (SMT) approved an approach to fast track elimination of onchocerciasis as one intervention that would enable Sightsavers to achieve long lasting impact; as the proof of principle that eliminating transmission of NTDs via preventive chemotherapy is confirmed. A natural link between our onchocerciasis programmes and lymphatic filariasis had therefore been made.

The most recent estimates of the burden of the disease suggest that 1.1million disability-adjusted life-years (DALYS)[2] were lost in 2015 due to onchocerciasis. Both the eye disease and the skin disease have been associated with a decrease in productivity.

Out of a total of 37 onchocerciasis endemic countries in the world, 31 are in Africa and these account for more than 99% of all cases of onchocerciasis and its related blindness. Isolated foci of the disease found in Yemen and six countries in Central and South America account for the remaining 1% of the global burden (WHO, 2002). 187 million people live in areas where there is potential for transmission of the parasite and this may increase with delineation of transmission zone/foci (WHO 2016). Coffeng et. al. (2013), reported that the overall mass treatment in the African Programme for Onchocersiasis with ivermectin averted 8.2 million DALYs in APOC supported programmes between 1995 and 2010 (3.2 million due to itch, 4.4 million due to blindness, 0.6 million due to visual impairment). Also four of six countries in the Americas (Mexico, Ecuador, Guatemala and Colombia) have successfully eliminated onchocerciasis and been verified by WHO (CDC, 2013; WHO, 2016).

947 Million people in 54 countries remain threatened by LF.

Out of the 73 countries considered endemic at the start of 2015, mass drug administration (MDA) was no longer required in 18 countries where post-MDA surveillance has been ongoing. The remaining 55 countries were considered to require MDA. (Source: www.who.int/mediacentre/factsheets/fs102/en).

[2] Global Burden of Disease 2015 DALYs and Hale Collaborators. Global, regional, and national disability-adjusted life-years (DALYs) for 315diseases and injuries and healthy life expectancy (Hale), 1990-2015: a systematic analysis for the Global Burden of Disease Study 2015. Lancet, 2016. 388: p. 1603-1658.

In the Africa region, 432 million people are at risk of LF in 34 countries (31% of the global total).

LF accounts for at least 2.8 million DALYs not including significant co-morbidity of mental illness commonly experienced by patients and their caregivers. As many as 36 million cases of hydrocele and lymphedema remain and in these patients health-care services are required for morbidity management and disability prevention (MMDP) to alleviate suffering and prevent further progression of disease (WHO, 2016).

Poverty remains the single most conspicuous determinant for NTDs and ultimately allows these diseases to continue to flourish. Both onchocerciasis and LF constitute serious obstacles to health and socio-economic development. Addressing these diseases is part of delivering on the Sustainable Development Goal (SDG) commitment to 'leave no-on behind' (Source: www.un.org/sustainable development/development-agenda). NTDs including onchocerciasis and LF are now included in the SDGs framework under target 3.3 within goal 3: Ensure healthy lives and promote well-being for all at all ages.

The inclusion of NTDs in this global framework ensures that accelerated progress on achieving the WHO NTD roadmap is recognised as a contributor to addressing inequity and promoting healthy lives. For example, it supports the NTD response to address equity in service delivery, supports surveillance systems that will deliver and endure and supports embedding actions to address the social and environmental risk factors that allow NTDs such as onchocerciasis and LF to flourish in the first place.

Sightsavers currently supports treatment to 34 million people for onchocerciasis in 18 African countries (Nigeria, Cameroon, Sierra Leone, Liberia, Uganda, Tanzania, Malawi, Ghana, Togo, Benin, Burkina Faso, Mali, Guinea, Guinea Bissau, Côte d'Ivoire, Congo, Democratic Republic of Congo and South Sudan). We also support treatment for LF to 44 million people in nine countries (Nigeria, Ghana, Benin, Cameroon, Liberia, Mali, Sierra Leone, Malawi and Tanzania; Map 2)

Following the results of transmission assessment surveys (TAS) indicating interruption of transmission of onchocerciasis, treatment for the disease has been stopped in 9 of 36 districts in Uganda, in two of 18 districts in Mali (Bougouni and Yanfolila) and one of two districts in Sudan (WHO, 2013). Sightsavers supports two of the nine districts in Uganda and one of the two districts in Mali. Similar surveys for interruption of transmission of LF have been carried out in some districts in Ghana, Togo, Benin, Burkina Faso, Mali, Uganda and Tanzania. All districts in Togo and districts in other countries that passed the assessments have stopped treatment and are in post surveillance. This is an important step towards elimination and we want this to be replicated in other projects.

1.2 Past, present and future control/elimination programmes

The first international effort to control onchocerciasis was the *Fonds Européen Développement* funds to the Upper Volta in the 1960s. Later, the Onchocerciasis Control Programme (OCP), from 1974 to 2002 was implemented in 11 countries in West Africa and covered an area inhabited by over 30 million people. The control strategy used by the OCP was aerial spraying of insecticides over fast-flowing rivers and streams; the breeding sites of the black fly. Following the closure of OCP, Special Intervention Zones (SIZ) were established to address particular problems due to failed vector control in Togo and reinvasion across borders in Benin.

The African Programme for Onchocerciasis Control (APOC) was launched in 1995 to extend control activities to other endemic countries, a partnership of Ministries of Health, local NGDOs, International NGDOs, the private sector (Merck & Co Inc.), donor countries, UN agencies and the beneficiary communities. Following the approval of Mectizan®, the core of APOC's operational strategy is Community Directed Treatment with Ivermectin (CDTI), a strategy that relies on the communities themselves to decide on mode and time of distribution as well as select community distributors and supervisors. APOC's mandate covered 19 countries outside the OCP. Three countries; Kenya, Mozambique and Rwanda, earlier included in APOC countries, were de-prioritized following the Rapid Epidemiological Mapping of Onchocerciasis (REMO) studies which found that they were onchocerciasis hypo-endemic.

In 2007, APOC's mandate was expanded to include support to four former OCP countries (also referred to as Special Intervention Zones or SIZ countries) – Côte d'Ivoire, Ghana, Guinea Bissau and Sierra Leone.

Improvements in TAS results carried out from 2008 to 2013, and publications from Bockerie et.al. (2013), Molyneux et.al. (2014) and Webster et.al. (2014) led APOC to conclude that elimination of onchocerciasis in Africa could be achieved. However, challenges remain that need to be addressed by partners to achieve the ultimate goal of elimination. APOC came to an end in 2015 and was replaced by the Expanded Special Project to Eliminate NTDs (ESPEN) in 2016. ESPEN addresses the five Preventive Chemotherapy-Neglected Tropical Diseases in Africa; it is a regional ten-year programme with WHO as the Executive Agency.

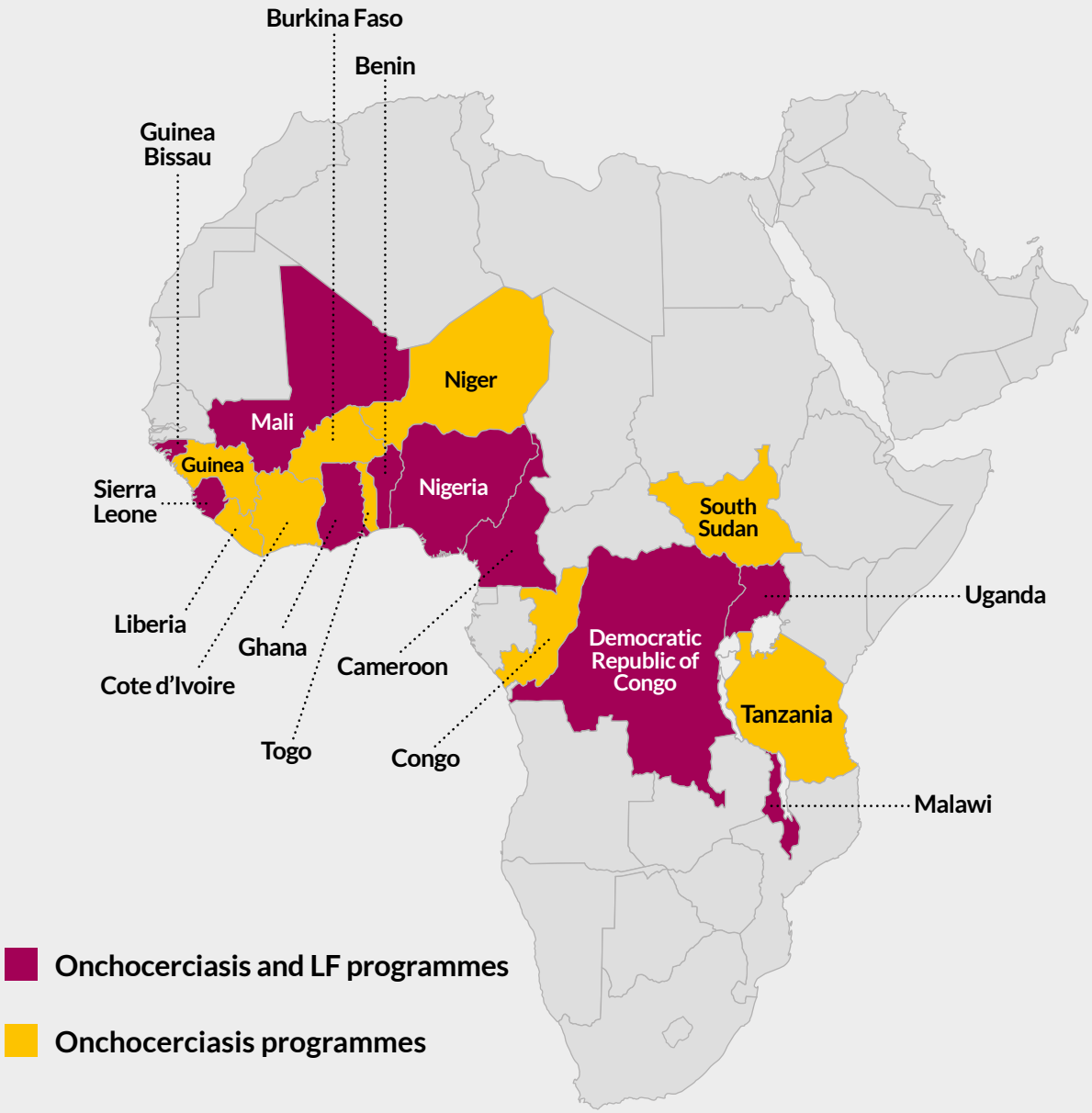
1.3 Global programme to eliminate lymphatic filariasis

The Global Programme to Eliminate Lymphatic Filariasis (GPELF) as a public health problem was launched by WHO in 2000. The aims of the programme are to interrupt transmission through MDA and to help people suffering from symptoms by providing access to the basic care needed to manage morbidity. GPELF's rapid scale-up in is remarkable given the number of endemic countries with active programmes; over 50 countries and some 600 million treatments. In 2012, WHO published the GPELF progress report for the first ten years of the programme and a strategic plan outlining its approach for the next ten years. While the scale-up is rapid, it is incomplete. The programme needs 1.4 billion treatments to achieve effective scale up; 464 million of these are in the Africa region. South Sudan and Angola need mapping and MDA while Chad, Guinea, DRC, Tanzania, Nigeria, Côte d'Ivoire and Cameroon are in most need of support for MDA.

2.0 Current situation and intervention strategy for the elimination of onchocerciasis and Lymphatic Filariasis

2.1 Sightsavers' supported countries

Sightsavers currently supports onchocerciasis programmes in nineteen countries, ten of which also have LF programmes.



Map 2: Current Sightsavers' supported countries

The implementation strategy for onchocerciasis is CDTI with annual MDA except in Benin, Guinea, Togo, Burkina Faso, Uganda and Ghana where implementation is bi-annual treatment to fast track elimination. The strategy for LF is MDA but CDTI is used in areas co-endemic for onchocerciasis.

Togo has interrupted the transmission of LF and is now on a five year surveillance stage. There is no LF co-endemicity in Sightsavers' supported projects in Uganda.

In 2015 Sightsavers supported 48 million ivermectin treatments. These treatments were delivered by 202,017 Community Directed Distributors (CDDs) and 23,700 health workers.

Sightsavers also supports entomological surveillance in ex-OCP countries. These countries send black flies to the Multi Disease Surveillance Centre (MDSC) in Ouagadougou, Burkina Faso for central analysis of infectivity rates of flies. We are building capacity locally in the other countries through development of the workforce and establishing linkages with laboratories in universities and research institutes.

All of the onchocerciasis and LF supported countries have national integrated NTD programmes which support an integrated approach to elimination.

Of the 19 countries we support, 17 have dedicated donor funding for NTDs programmes while CAR and Congo do not have dedicated funding and would require mobilization of resources to support their programmes.

Country	Donor funding
Uganda, Ghana, Mali, Cameroon, Burkina Faso, Cote d'Ivoire, Tanzania & Guinea	USAID, DFID and END Fund
Sierra Leone	USAID and EC
Malawi, Nigeria & South Sudan	DFID
DRC	USAID, DFID and END Fund
Liberia	DFID
Benin, Togo	USAID
Guinea Bissau	DFID

Table 1: Status of country dedicated donor funding

Even though MDA is the main activity that has been integrated, efforts are still underway to integrate other amenable activities. Presently, the show-case countries for integrated NTD elimination are Tanzania and Nigeria. Tanzania has a fully integrated programme while in Nigeria Sightsavers is supporting integrated NTDs in Zamfara and Kaduna states (with funding from DFID) as well as Kebbi Kwara, Kogi and Sokoto states (UK Aid match). Other countries with integrated NTD programmes are Ghana and Cameroon.

Indicator	Onchocerciasis	LF
Number of countries	19	9
Delineation	Nigeria, CAR, Congo, Cameroon, Côte d'Ivoire	DRC, S/Sudan
Scale of implementation	Full scale except G/Bissau, Côte d'Ivoire and DRC	No MDA: Guinea <100% MDA: DRC Nigeria, Tanzania, Liberia 100% MDA: Benin, Togo, S/Leone, Malawi
Integrated vector control	Uganda – 2 foci in Acholi region	None
Transmission assessment survey	All 28 projects	Ghana, S/Leone, Benin, Malawi, Mali
Scale down	Uganda – 2 sites, Mali – 1 site	Ghana 76, Benin 46, S/Leone 14, Mali 16, Tanzania 33

Table 2: Status of onchocerciasis and LF in Sightsavers supported countries

From the analysis of the current situation, the wider programme review and a literature review, the following issues and challenges stand out:

- **Risk of not treating as a result of the Ebola virus disease.** Liberia, Sierra Leone and Guinea have missed one to two rounds of treatments. Following the control of the Ebola virus disease in 2015, MDA has resumed. Resources will be required to replace transportation and training of new CDDs.
- **Low geographic coverage rates (GCRs) and therapeutic coverage rates (TCRs):** The major contributors to the low GCRs and TCRs were South Sudan and Côte d'Ivoire. The reasons for this in South Sudan were insecurity, inadequate health workforce at frontline level, poor infrastructure, instability and weak coordination at national level. Weak coordination led to the poor treatment in Côte d'Ivoire. Recent findings show that sustaining a GCR of 100% is crucial and a TCR of at least 80% in all supported projects, for a period to be determined by the frequency of treatment is required to achieve elimination of both onchocerciasis and LF in many of the sites.
- **Scaling-up:** LF treatment in Cameroon, DRC and South Sudan requires implementation of an agreed protocol to manage the MDA effectively, because of *loa loa* endemicity (which can cause severe adverse effects) requires implementation of an agreed protocol to manage the MDA effectively. Other countries in need of MDA scale up are Angola, Guinea, Chad, South Sudan, Nigeria, Tanzania and Côte d'Ivoire. Scaling up of treatments is crucial to achieving elimination by 2020.
- **Engagement** of community leaders and members to: (i) increase and sustain high coverage rates; (ii) improve CDD numbers (population ratio to 1:100) and (iii) address issues of CDD motivation which are important in sustaining high coverage.
- **Strengthening capacity** for epidemiological and entomological studies to ensure the required skills for surveillance are available.
- **Integration** of NTDs into the wider health system and promoting co-implementation of multiple heath interventions to ensure delivery and sustained elimination of NTDs.
- **Expansion** of programme support to new countries especially post-conflict countries where the need remains great and where there are gaps in NGDO support (such as Central African Republic and Angola).

2.2 Human resource development – Sightsavers' staff

Sightsavers has over the years accumulated substantial internal human resource experience in onchocerciasis programming. Elizabeth Elhassan and Johnson Ngorok have served as APOC Technical Consultative Committee members, and a number of others regularly participated in APOC's evaluations, research, trainings and other activities.. Simon Bush has been Chair of the NGDO Group for Onchocerciasis Control and NTD NGDO Network (NNN) and is a member of the Regional Programme Review Group (RPRG) of WHO/AFRO. Additionally, the organisation has technical advisors and an epidemiologist, strong networks and partnership at all levels of programme implementation including at country level (with Mali, Cameroon, Nigeria, Burkina Faso and Uganda having experienced country teams with extensive knowledge of onchocerciasis and community directed approaches). We also have NTD programme managers in Senegal/Guinea Bissau, Mali, Guinea, Nigeria, Cameroon, Kenya, Uganda, South Sudan and Zambia.

In addition, we have social inclusion capacity with a focus on gender and disability to promote inclusion in programmes we support. For example, in 2015, Sightsavers adopted a new social inclusion strategic framework: Empowerment and Inclusion, which sets out our commitment to disability inclusion and gender mainstreaming across the board. Thus NTD programming too will benefit from internal technical expertise provided in disability and gender.

This enormous capacity and knowledge will be pivotal in the implementation of this strategy.

CDD Tabeh Martina with her measuring stick, Bamenda, Cameroon, July 2013.

3.0 Elimination of onchocerciasis and lymphatic filariasis

Sightsavers is well positioned to promote country leadership and ownership of programmes to achieve and sustain elimination of onchocerciasis and LF within the wider health system to reduce avoidable blindness and poverty and promote social inclusion of people with disabilty. We have adopted the WHO frameworks on elimination (WHO, 2010) to frame our work and support. The following areas need to be addressed and goals achieved:

- **Scaling up and sustaining mass drug administration**
  - scaling up LF treatments in new endemic areas
  - sustaining annual treatments for both onchocerciasis and LF in on-going treatment areas
  - starting multiple treatments for onchocerciasis based on modelling for transmission interruption
  - bi-annual treatment with albendazole in areas co-endemic for LF and loaisis
  - using mHealth for data collection and reporting

- **Disease management and disability inclusion (DMDI)**

  Disease Management
  - build the capacity of surgeons in the use of the innovative Filaricele Anatomical Surgical Task Trainer (FASTT) for hydrocele
  - build capacity of Sightsavers staff and partners in the new, easy-to-use calculators for determining quantities of medical supplies needed for hydrocele and lymphedema management activities
  - build capacity of staff and partners in the use of new tools in DMDI
  - build capacity of CDDs in identification and use of mHealth in referral of individuals with elephantiasis and hydrocele to health facilities and supporting continuum of care for the former
  - introduction of WASH strategy into the management of LF Disability inclusion
  - strengthen relationships with disabled peoples organisations (DPOs) to ensure greater numbers of people with disabilities are included in MDA
  - build capacity of CDDs on disability inclusion and gender mainstreaming
  - develop disability inclusion strategies as part of each project planning process

- **Vector control/Integrated vector management**
  - modelling to fast-track interruption of transmission of onchocerciasis
  - vector management in areas that are co-endemic for *Loa loa* and LF and with a heavy burden of disease where MDA has not sufficiently reduced transmission, and during post-treatment surveillance
  - integrating elimination of LF with malaria control
  - integrating elimination of LF into water and sanitation and hygiene programmes
  - addressing source of vector infection

- **Transmission assessment surveys**
  - assessing epidemiological and entomological pertinence of stopping MDA and considering the transmission status of onchocerciasis and LF in implementation units and surrounding areas

- **Scaling down MDA**
  - stopping MDA in IUs based on evidence that transmission has been interrupted e.g Uganda for onchocerciasis and Ghana for LF
- **Post MDA surveillance**
  - monitoring recrudescence until the country achieves elimination at a national level.
  - using mHealth in reporting data during post MDA surveillance to facilitate prompt response from health system
- **Verification and validation of elimination**
  - supporting countries to comply with protocol for verification and validation and maintaining elimination of onchocerciasis and LF.
- **Use of new tools and medicines as they are approved by WHO**
  - using new tools and medicines as they become available including tools for better understanding of data for equity
  - ensure programmes we support participate in the roll out of new tools and medicines

Countries we support should achieve interruption of transmission of both diseases and meet the criteria for stopping treatment based on WHO targets (WHO, 2014) as follows:

Year to stop MDA	Onchocerciasis	LF
2014	None	Malawi
2015	Niger, Malawi	None
2016	Mali, Chad	B/Faso, Mali, Niger
2017	S/Leone, G/Bissau, Guinea, Togo, Benin	None
2018	Burkina Faso	Ghana
2019	Tanzania, Uganda	Benin, Cameroon, Côte d'Ivoire, G/Bissau, Liberia, Uganda
2020	Nigeria, Côte d'Ivoire, Ghana, Cameroon, Congo	Angola, Congo, Nigeria, S/Leone,Tanzania
2021	None	None
>2025	Liberia, CAR, DRC, South Sudan	CAR, Chad, DRC, Guinea, South Sudan

Table 3: Due dates for stopping MDA for onchocerciasis and lymphatic filariasis

At the end of 2015, interruption of transmission of onchocerciasis was reported in 2 foci in Uganda and one foci in Mali.

4.0 Vision, goal, drivers and strategic objectives

4.1 Vision

The onchocerciasis and LF ten year strategic plan will contribute to the overall organisational vision.

> No one is blind from avoidable causes, visually impaired people participate equally in society.

4.2 Goal

Supporting countries we work in to eliminate onchocerciasis and LF and manage morbidity by 2025 and 2020 respectively.

4.3 Drivers and strategic objectives

Driver 1:

Onchocerciasis elimination is unfinished business, more so in onchocerciasis and LF overlap areas which provide an opportunity for a joint approach to stop treatment of both diseases in most countries by 2020.

The shift from control of onchocerciasis as a public health problem to elimination of the disease requires delineation of transmission zones due to the expansion of treatment to hypo-endemic communities particularly those within transmission zones. This, therefore, makes it an unfinished business because of the risks from pockets of persistent transmission, cross-border infection and recrudescence of the disease. Mass drug administration of ivermectin and albendazole must therefore continue, using the CDTI and MDA strategy annually or twice yearly (as appropriate), to protect the gains until localised elimination of infection and interruption of transmission in transmission zones has been achieved.

The arrival at the decision to stop treatment is complicated and can only be made after TAS have confirmed elimination of infection and interruption of transmission.

Strategic objective 1:

Complete and maintain full geographic and therapeutic coverage ensuring access to interventions, for onchocerciasis and LF, to achieve elimination.

Expected outcome

Annual geographic coverage rates of 100% and therapeutic coverage rates of 85% are achieved in all supported projects.

Action 1: Strengthen the capacity of communities to undertake MDA activities through support of training to 280,000 CDDs annually.

Action 2: Promote community motivation of CDDs through:

- nomination of adequate numbers of CDDs using CDD:population ratio of 1:100 as guidance to reduce workload and demand for incentives.
- provision of incentives (monetary or in kind eg exemption from community levies and mandatory activities).

Action 3: Strengthen the capacities of district and FLHF staff to support communities in implementing CDTI activities through support in training 30,000 health workers annually.

Action 4: Support 19 countries to implement sustainable surveillance plans developed after treatment has been stopped.

Action 5: Reinforce health education, sensitisation, advocacy and mobilisation (HSAM) activities twice a year or annually (as appropriate) in all supported countries to maintain 100% geographic and over 80% therapeutic coverage.

Action 6: Monitor the ordering, storage and delivery of medicines ivermectin and albendazole ensuring timely arrival.

Action 7: Provide management and technical support to programmes through visits by country and NTD staff.

Action 8: Strengthen the M&E system at all levels ensuring that learning is fed back into programme operation.

Action 9: Use a variety of strategies (eg multiple treatment, alternative therapeutic regimens, vector management) as part of WHO Integrated Vector Management approach for LF with malaria bednet/LLIN programmes.

Driver 2:

Safely scale down and stop interventions for onchocerciasis and lymphatic filariasis and support countries to verify elimination.

Niger can end surveillance while some projects in Nigeria, Uganda, Tanzania and Ghana can stop treatment for either onchocerciasis and/or LF by 2015/2016. The example of OEPA has shown that the last stage of elimination can be the hardest part of the programme.

It is important that the WHO's and partners' guidelines to stop treatment for both onchocerciasis and LF are harmonised for a joint approach depending on the co-endemicity and duration of treatment for each disease. Communities and health workers should be informed why treatment will cease. Albendazole can be used to treat STH therefore due attention will be paid to the need for continued treatment with the medicine.

Strategic objective 2:

Safely scale down and stop interventions for onchocerciasis and lymphatic filariasis and support countries to apply for verification/validation by WHO.

Expected outcome

Projects/Countries/IUs receive approval for stopping MDA and proceed through process of PTS.

Action 1: Actively participate in the development and validation of joint WHO guidelines for assessing the transmission of onchocerciasis and LF where the two diseases are co-endemic.

Action 2: Support countries with the implementation of the guidelines for stopping MDA within the broader health systems and to verify elimination.

Action 3: Assist with communication around plans to stop MDA.

Action 4: Ensure post treatment surveillance and documentation is integrated into the broader health system eg national surveillance systems, HMIS.

Action 5: Prepare national elimination dossier for verification.

Process

Action 6: Assist countries through verification.

Driver 3:

The risk of cross border re-infection in countries where interruption of transmission and elimination of infection has been achieved.

A number of countries are in the surveillance phase following the achievement of interruption of transmission by the time the Onchocerciasis Control Programme was stopped in 2002. However, the risk of cross border re-invasion by the black fly remains a reality; this has already happened in some foci where low fly infectivity rates have been detected. In some of the countries, such as Guinea Bissau and Sierra Leone, civil strife and political instability interrupted control activities which has led to recrudescence of the disease. Ivermectin treatment is on-going in certain foci as well as surveillance activities which will need to be continued until sustained interruption of transmission has been achieved.

Strategic objective 3:

Protect the gains in the supported countries and achieve or maintain interruption of onchocerciasis transmission.

Expected outcome

Epidemiological and entomological surveillance in sentinel villages show evidence of interruption of transmission in supported countries.

Action 1: Carry out all the Actions of Objective 1.

Action 2: Support epidemiological and entomological surveillance activities through MDSC including:

- strengthening capacity in epidemiological and entomological studies.
- carrying out surveys in sentinel sites and additional villages.
- application of findings in programme operations.

Action 3: Support cross-border collaboration and review meetings where there are risks of cross-border re-infection.

Driver 4:

Low geographic coverage rates and therapeutic coverage rates in post-conflict countries/fragile states delaying the achievement of elimination in Africa.

Sightsavers and the NGDOs in South Sudan support the South Sudan Onchocerciasis Task Force, Ministry of Health to ensure improved and sustained coverage.

A stakeholders meeting convened in 2013 and developed a road map to re-launch CDTI and other PCT NTDs control/elimination activities. The purpose of the road map is to initiate all the pre-requisite activities in South Sudan during the period 2013-2015 to enable the newly independent country to implement the WHO roadmap and meet the targets of the London Declaration for control and elimination of NTDs.

Strategic objective 4:

Expand supported onchocerciasis programmes to three countries (Angola, Chad and Central African Republic) working with partners.

Expected outcome

Increased capacity of NOTFs to manage NTD programmes and attain annual GCRs and TCRs required to progress towards elimination.

Action 1: Establish partnership with NTD Task Forces and NGDOs already in place to support Angola, Chad, Yemen and CAR NTD programmes.

Action 2: Partnering with the United Front Against River Blindness. Support four projects in the DRC.

Action 3: Develop detailed project proposals outlining need, interventions to be supported and financial requirements.

Action 4: Mobilize and disburse resources to finance priority interventions.

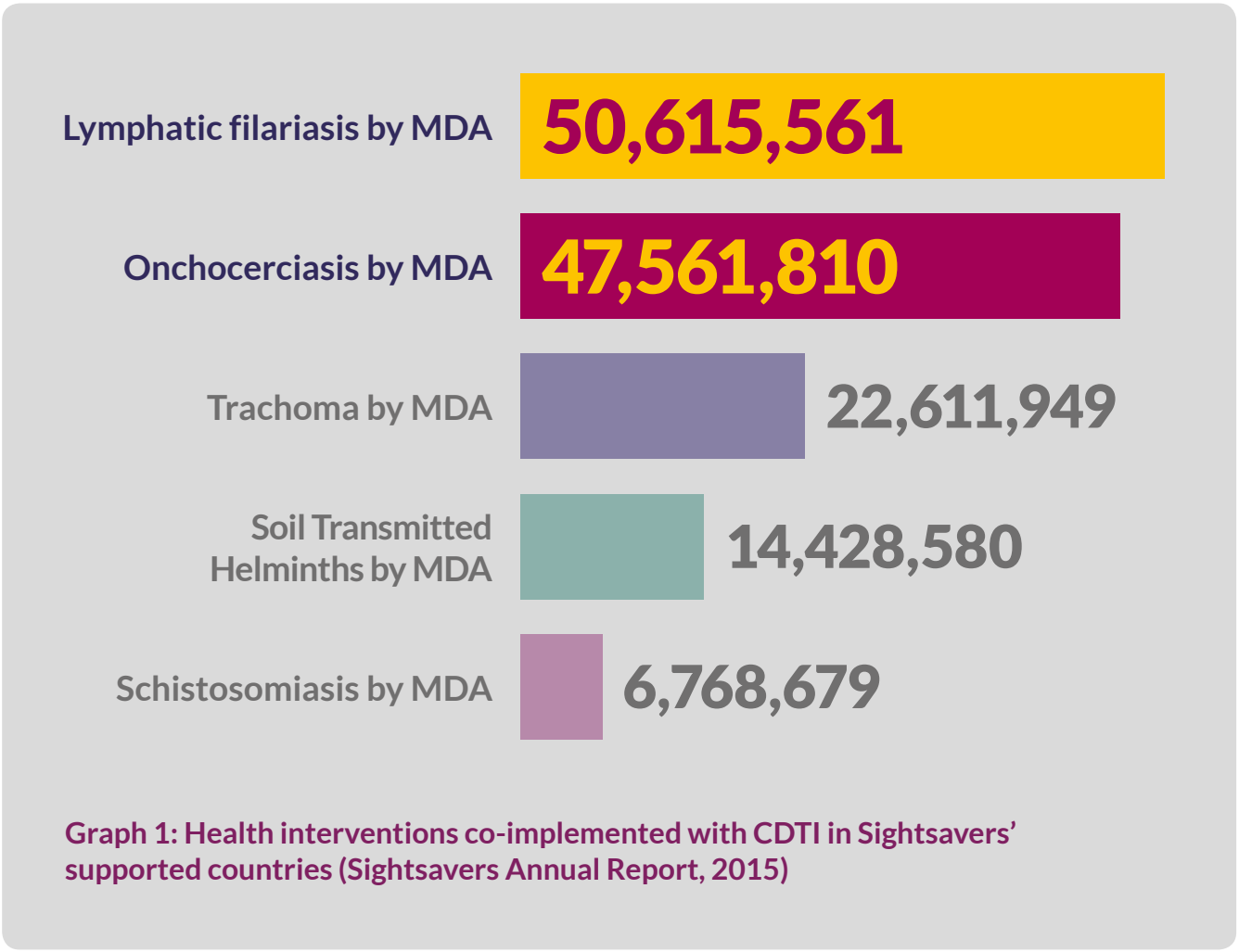
Action 5: Support partner(s) implementation of projects and scale-up operations to achieve geographic coverage rates of 100% and therapeutic coverage rates of 80% of total/eligible population.

Driver 5:

Strengthening health systems as a means of attaining and sustaining elimination of the NTDs within the broader health system in an equitable, cost effective and efficient manner.

WHO has called for greater investment in health systems, harnessing and focusing the energies of communities, NGOs and the private sector to bring them to bear in achieving better health outcomes. An analysis of the health system for clarity on investments needed is essential to harness support for elimination efforts. Cavalli et al. (2007) provided an analysis of the potential positive and negative effects of the interaction of Global Health Initiatives (GHIs) and each of the six building blocks of a country health system. The elimination of NTDs provides opportunities to strengthen the health system and social determinants of health, partnership, integration and co-implementation for responsive, efficient and quality delivery of services.

In addition to treatment for onchocerciasis and LF, Sightsavers in 2015 supported the delivery of more than 57 million additional health interventions using the network of community volunteers in remote communities. These interventions included treatment for LF, schistosomiasis and soil transmitted helminthiases, trachoma and cataract and trichiasis case finding. LF represented 40% of the interventions delivered (Graph 1).



Graph 1: Health interventions co-implemented with CDTI in Sightsavers' supported countries (Sightsavers Annual Report, 2015)

Strategic objective 5:

Promote a systems response to the delivery of elimination of onchocerciasis and LF with other health interventions.

Expected outcome

Elimination of onchocerciasis and LF and other Preventive Chemotherapy/NTDs programmes integrated into wider health system, achieved and sustained.

Action 1: Strengthen capacity of local partners to use integrated planning tools.

Action 2: Work with other disease specific control programmes to map out areas of overlap with CDTI projects.

Action 3: Establish MDA as an equitable and sustainable community strategy contributing to universal coverage of health programmes.

Action 4: Work with the network of CDDs where eye health services are available to carry out cataract case detection, trachoma TT case detection and detection and referral of childhood blindness cases in Sightsavers' supported eye health projects, using referral cards for tracking.

Action 5: Link to social inclusion strategies through ensuring marginalised people, especially people with disabilities are reached in MDA. This means ensuring that at national level, networks are established with BPOs and DPOs, to support outreach activities and promote inclusion. This may include training for CDDs by people with disabilities and it may include recruitment of people with disabilities to serve as CDDs.

Action 6: Work with the network of CDDs to refer and support persons with LF and hydrocele to health facilities and promote community motivation of CDDs in cash or in kind and/or exemption from levies and community activities.

Action 7: Work with international and regional partners to promote integration and co-implementation of ivermectin and albendazole with other health interventions that are amenable to CDI.

Action 8: Conduct integrated monitoring of NTDs and co-implemented interventions.

Driver 6:

Data is required for elimination decision making and to sustain surveillance during the post-treatment period to avoid any recrudescence.

Surveillance of onchocerciasis and LF is required to establish if the "break point" has been reached for post-treatment surveillance to monitor recrudescence of the diseases; and for continued disease surveillance until onchocerciasis and LF are eliminated from a whole country and from the African continent.

Strategic objective 6:

Strengthen surveillance activities in twenty-two supported countries through partnership with the national universities and research institutes.

Expected outcome

Evidence based decision making on when to stop treatment, monitoring disease recrudescence and on certification of elimination.

Action 1: Strengthen institutional capacity for onchocerciaisis and LF laboratory based surveillance.

Action 2: Conduct active laboratory-based surveillance to give evidence of elimination where feasible.

Action 3: Build in-country capacity for the management of onchocerciasis and LF laboratory surveillance.

Action 4: Link the activities of Sightsavers' epidemiologist with that of national universities and research institutes.

Action 5: Conduct operational research to provide information for re-enforcing sustainable surveillance.

Action 6: Monitor progress and evaluate results of elimination activities in countries:

- identify all onchocerciasis projects that have completed 12 rounds of MDA with high coverage.
- identify all LF implementation units that have completed 6 rounds of MDA with adequate coverage, prevalence <2% in sentinel sites and spot check sites.
- assess transmission status through surveys or epidemiological evaluations to identify areas where MDA could potentially be stopped.
- assess epidemiological pertinence of stopping MDA considering the transmission status in the IU and surrounding areas.
- stop MDA in IUs where there is evidence that interruption of transmission of onchocerciasis and LF has been achieved.

Action 7: Build partner capacity in use of mHealth/data management and ensure reliable data on onchocerciasis and LF are available and shared to inform planning.

Cecilia works on her families homestead with her children after receiving her Mectizan® treatment in Kachia, in Kaduna State Nigeria.

Driver 7:

The need for scientific information to inform programme planning, policy development and health system strengthening.

The research questions to be addressed include role of facility and CDDs in case finding and Disease Management and Disability Inclusion; cost effective approaches to M&E; optimum sampling techniques to verify elimination of onchocerciasis and LF; effective coordination and integration into the wider health system.

A key strategic objective of Sightsavers is to support learning through generation and dissemination of sound research and evidence. Further, all evidence should be analysed through a gender lens in order to identify any differences. DFID has funded research to the Liverpool School of Tropical Medicine to inform programme implementation.

Strategic objective 7:

Promote research and the generation of evidence for programme planning, policy development, strengthening of health systems and publications in peer reviewed journals.

Expected outcome

Evidence based decision making at the programme, operational and policy development levels.

Action 1: Country offices to work with implementing partners, universities and local research institutes to develop research plans and explore funding opportunities; including with:

- implementation Research Platform (awards research grants)
- sightsavers' research grants (through the Director of Research).

Action 2: Work with the research unit, LSTM and Imperial College, UK, national universities/programmes in countries we support to feed into the organisation's strategic research plans by identifying:

- innovations which will support elimination
- key operational questions emerging in NTD programmes and how to build capacity to address them.

Action 3: Collaborate with WHO on research on transmission assessment required for decision making on progress towards elimination; especially.

- studies to determine if the "break point" has been reached
- studies on the impact of human and flies migration into transmission zones
- post-surveillance sentinel surveys.

Action 4: Collaborate with universities, research/academic institutes, Research Triangle Institute, WHO/TDR, Coalition for gender-responsive Operational Research on NTDs, Task Force for Global Health NTD Support Centre on:

- operational and implementation research eg DFID funding to Liverpool and Gates funding to Atlanta
- research to implement and monitor combined programmes for onchocerciasis and LF and
- operational and implementation challenges from the programme
- evidence on access to services by persons with disability.

Action 5: Work with partners to promote utilization of research findings to improve on programme operations and the delivery of interventions.

Action 6: Collaborate with telecommunications organisations on the use of mHealth for data collection and reporting.

Action 7: Investigate effect of add-on to CDD work load eg screening for other diseases, referrals on quality assurance.

Action 8: Build Sightsavers' evidence base to demonstrate the impact of elimination of onchocerciasis and LF on community health systems.

Action 9: Sightsavers' staff to prioritize time for writing and publishing papers in peer-reviewed journals.

Action 10: Use Sightsavers generated evidence to influence national policy development and policy frameworks in support of elimination.

Driver 8:

Low funding for some NTDs (e.g scale up of LF) by international donors and by national governments.

NTDs were not always prioritized in global development or funding frameworks, however their inclusion in the SDGs is recognition of their contribution to global health and socio-economic development.

One of the successes of the NTD response has been its ability to provide preventive treatments to communities at risk of NTDs at no financial cost to the service user. However, other elements of the NTD response, such as clinical treatment for trichiasis, hydrocele services, or curative treatment are not always as accessible, particularly in terms of finance. To be truly sustainable, elimination efforts will need to ensure that all elements of the NTD response including preventive, curative and rehabilitative and support services are accessible and financially fair to all population groups.

Financial and political commitments are key to the achievement of elimination targets for oncho and LF. Notable among these are the WHO Roadmap for NTDs (2012) the London Declaration (2012), bilateral funding from DFID and USAID, the WHO NTD resolution (2013), the Addis Commitment (2014) and increasing support from the END Fund. The NTD community must continue the momentum and fulfil the potential of these commitments, whilst also seeking to secure increased financial and political commitment to eliminate NTDs from both endemic countries and donors.

However, these challenges should not detract from the significant NTD progress and the financial and political commitments.

Evodia Njah, 35, is the Community Directed Distributor in a village called Kesu in Wum, dealing with the issue of river blindness in the North West region of Cameroon.

Strategic objective 8:

Increase profile and prioritisation of elimination for onchocerciasis and LF with decision makers and funders, to meet funding gap for sustainable elimination programmes.

Expected outcome

NTDs are represented within global health discussions and outputs.

The funding gap is met for sustainable elimination of onchocerciasis and LF through domestic and donor resource mobilisation.

Increased profile and funding available for onchocerciasis and LF.

Action 1: Sightsavers advocacy work supports representation of onchocerciasis, LF and other NTDs in prioritized international frameworks and processes.

Action 2: Through strategic advocacy, the profile of NTDs, specifically onchocerciasis and LF is increased within global development and health dialogues.

Action 3: Sightsavers to sustain focus of funding efforts and ensure good management of existing grants and contracts (currently managing around £100m, largely for trachoma).

Action 4: Sightsavers is a grantee of choice for new and existing funding streams for onchocerciasis and LF.

Action 5: National and international NTD funders prioritise resources for HMIS and surveillance activities.

Action 6: Through successful advocacy efforts, national governments in countries endemic for NTDs demonstrate increased leadership and investment to achieve elimination of onchocerciasis and LF.

Action 7: Engage with regional organisations to raise the profile and build support for the NTD response and of onchocerciasis and LF elimination programmes.

4.4 Theory of change

Sightsavers believes that if our partners can demonstrate success doing something completely new or doing something established but in an improved way it can be a catalyst for replication on a larger scale. We can contribute to larger scale benefits and longer term sustainable impact which meets the needs of the communities. Through our ability to support and influence Sightsavers aims to work with, and within, the health systems of the countries where we operate to eliminate onchocerciasis and LF and other NTDs through provision of technical and financial support, collection of evidence and capacity building.

Figure 1 below shows how Sightsavers aims to achieve elimination of onchocerciasis and LF as well as sustained surveillance to address recrudescence in a timely manner. These activities have a positive impact on the health system and beneficiaries.

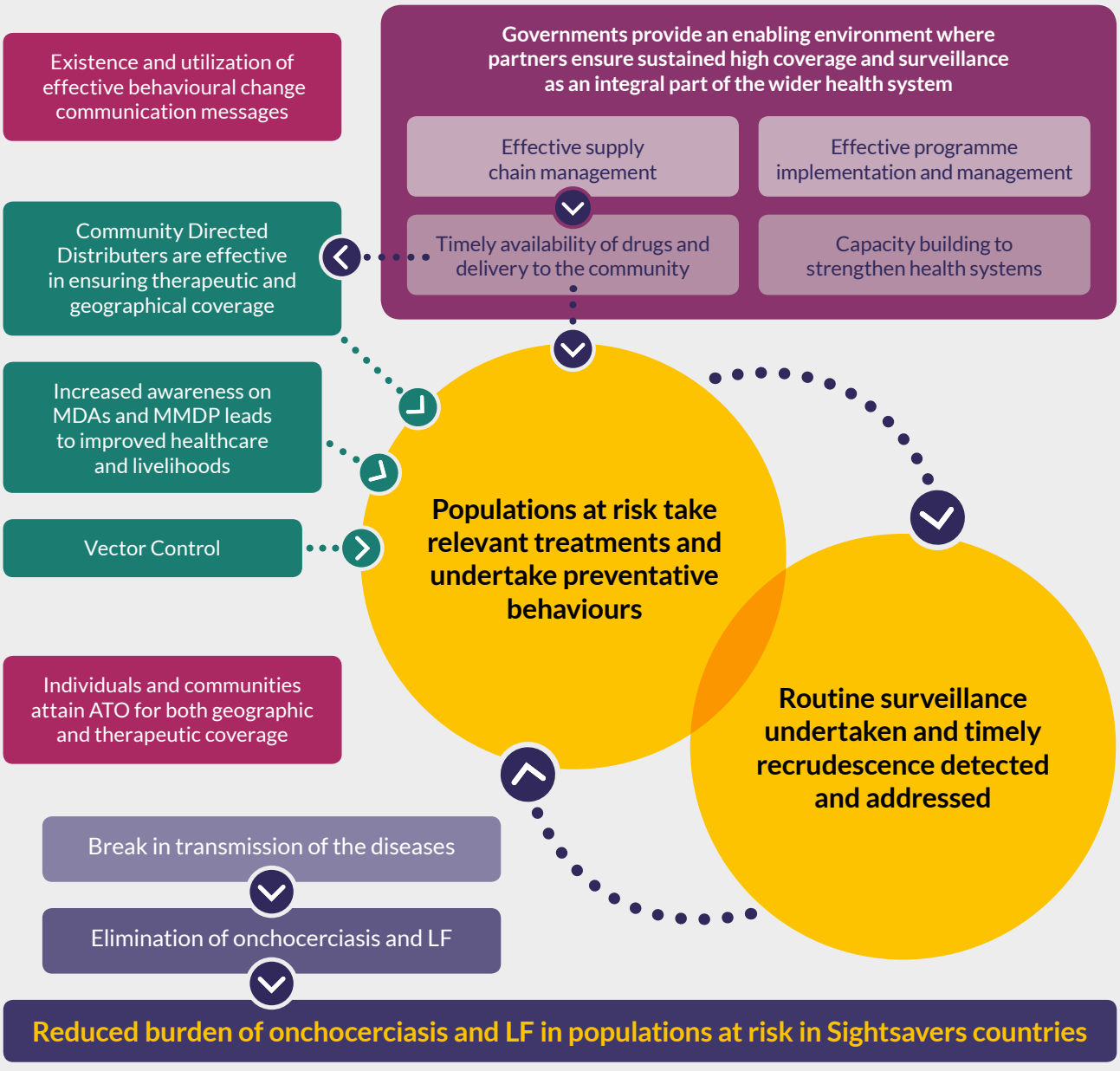
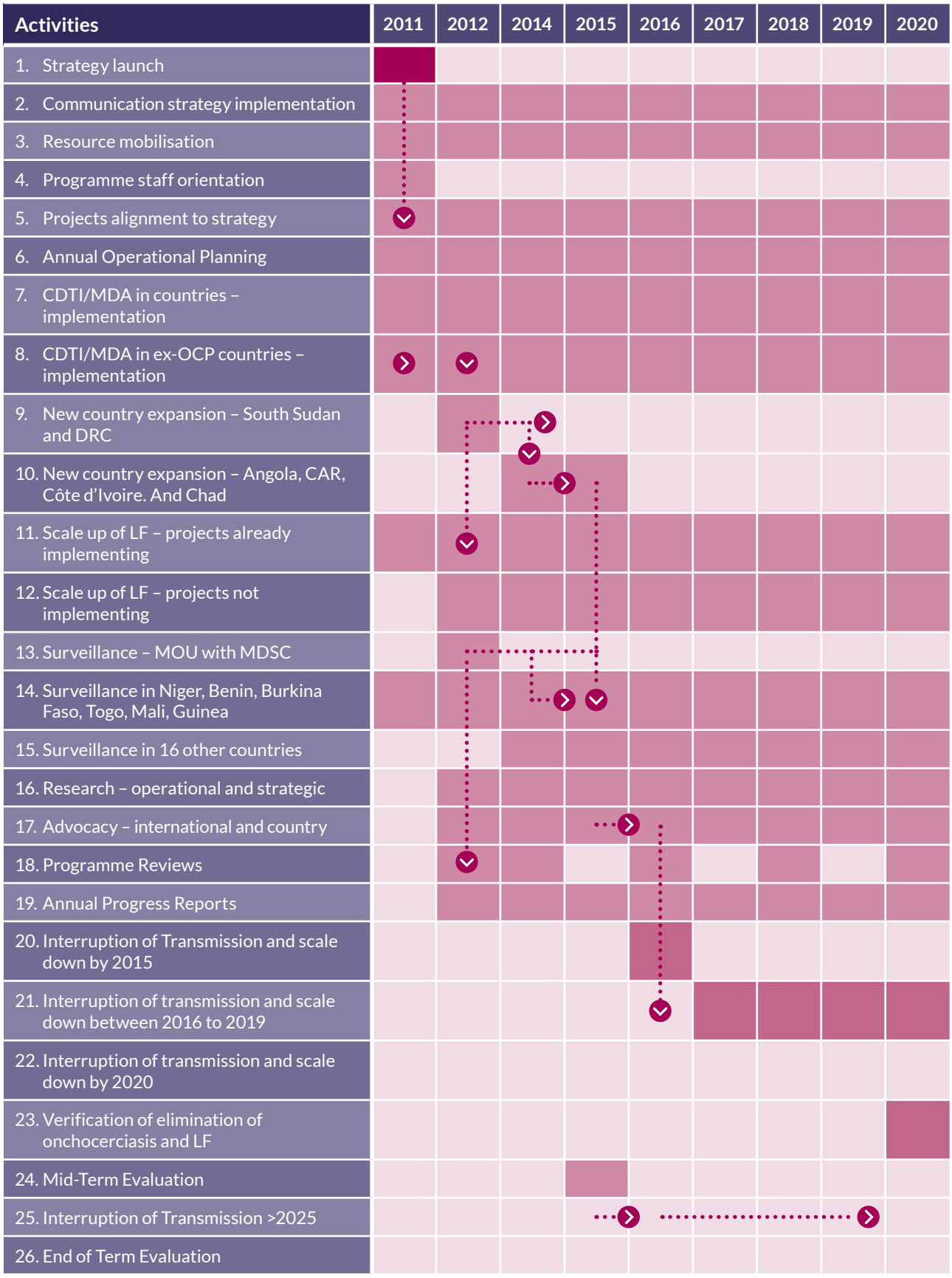


Figure 1: Theory of change

5.0 Critical pathways and milestones



Children of Muntari Maiwada recieve their Mectizan® Treatment in Kachia, in Kaduna State Nigeria on the 18th September, 2009.

6.0 Implementation and monitoring and evaluation

6.1 Implementation

The ten year strategic plan for elimination of onchocerciasis and LF was implemented within the broader structures of the APOC partnership up until the end of APOC in 2015. That partnership included the APOC secretariat, JAF, TCC and NGDO Coordination Group at the international level and NOTFs and NTDs coordination bodies in-country.

In line with Sightsavers' structure, country offices take the lead in the implementation of this strategy. Technical and programme support is provided by the Directorate of NTDs and Policy and Programme Strategies. The Technical Director coordinates the implementation of the plan.

This takes into account the fact that WHO is a strong partner and that support from NGDOs is complementary to the work that WHO does. In addition, the Sightsavers NTD team plans and coordinates the implementation and report of the onchocerciasis/LF and trachoma ten year strategic plan strategies.

The country offices, regional teams and Directorate of NTDs, Directorate of Policy and Programme Strategies and Directorate of Finance and Performance are responsible for the following:

Country offices	• Align programmes to new strategy • Support partners to implement plans • In-country advocacy for improved funding • Engage advisory bodies and other relevant activities
Directorate of Finance and Performance	• Provide strategic support to countries • Manage programmes in new countries • Support communication on scale down, stopping treatment and PTS
Directorate of NTDs	• Coordinate the implementation of the overall strategy • Coordinate learning within and outside the countries • Manage onchocerciasis and LF projects in new countries where there are no country offices • Support scale down and stopping of treatments
Directorate of Policy and Programme Strategies	• Support resource mobilization • Manage other fund raisers
Directorates of NTDs and Policy and Programme Strategies	• Provide technical and programme development support • Support operational, implementation and innovative research • Support M&E • Engage in international advocacy for greater inclusion of donor agenda

Diagram 1: Responsibilities of Sightsavers' offices and directorates

A detailed Annual Operational Plan (AOP) will be developed each year in line with this strategy by the NTD team. The AOP will also take into account critical changes in the operating environment that are relevant to this strategy. This is important for continuous alignment to the elimination agenda.

6.2 Monitoring and evaluation

Sightsavers will support countries to set up national elimination committees. These committees will monitor progress towards elimination.

Annual Project Reports (APRs) for NTD projects will be prepared by countries and submitted to Sightsavers headquarters. Periodic monitoring of delivery against indicators will also be conducted through country visits by regional and NTD staff.

Reviews of national oncho committees and National Task Forces will take place. WHO elimination indicators will be monitored.

Annual or bi-annual programme review meetings will be conducted to provide a forum for coordination, programme and technical support and interaction of programme teams with the external audience which will be coordinated with the trachoma FTIs.

An evaluation of the plan for the ten year strategic plan will be conducted at mid-term (2016) and the end of term (2020).

The following indicators will be used to monitor performance.

GOAL **Elimination of infection and transmission of onchocerciasis and LF in Sightsavers' supported countries.**

Indicator	Targets
Number of countries which have eliminated one or both diseases and submitted dossiers	9 of 22 supported countries by 2015
Number of countries going through post-treatment surveillance	All 22 supported countries by 2020
Number of transmission zones/ onchocerciasis countries where the parasite mf load has fallen below breakpoint ie below 0.1%	All 22 supported countries by 2020
Number of implementation units where Antigen levels have fallen below threshold	All 22 supported countries by 2020
Number of transmission zones/ onchocerciasis projects where fly infectivity rates meet the elimination criterion ie · Larva stage 3 in flies < 0.05% · Annual transmission potential lower than 5-20 L3 season. 2%	9 of 22 supported countries by 2015 All 22 supported countries by 2020 All implementation units by 2020

Strategic objective 1:

Complete and maintain full geographic and therapeutic coverage rates, ensuring access to interventions for onchocerciasis and LF to achieve elimination of both diseases.

Indicator	Targets
Number of ivermectin and albendazole treatments supported by Sightsavers	26 million onchocerciasis treatments decreasing from 60 million and 50 million LF treatments, decreasing from 80 million as treatment is stopped where elimination has been achieved
Proportion of hydrocele surgeries performed	All LF projects supported by Sightsavers
Proportion of individuals with elephantiasis receiving care	All LF projects supported by Sightsavers
Number of supported projects attaining an annual GCR of 100% and TCR of 80%	All projects in 21 supported countries
Increase in the number of countries attaining a CDD: population ratio of 1:100 or better.	17 of 22 countries achieve this by 2015
Number of countries conducting community self-monitoring (CSM) and stakeholders meetings (SHM)	10 of 22 countries by 2015
Supported countries implementing an effective health education, sensitisation, advocacy and mobilisation strategy	All 22 countries implementing effective health education, sensitisation, advocacy and mobilisation activities

Strategic objective 2:

Safely scale down and stop interventions for onchocerciasis and LF and support countries to verify elimination.

Indicator	Targets
Number of countries proceeding through post treatment surveillance	9 of 21 supported countries by 2015
Proportion of implementation units receiving WHO/AFRO support for post treatment surveillance activities	All 22 supported countries by 2020

Strategic objective 3:

Protect the gains in supported countries.

Indicator	Targets
Enhanced human research and laboratory capacity for epidemiological and entomological surveillance	9 of 22 countries by 2015. All 22 countries by 2020
Parasite mf loads, fly infectivity rates and serology demonstrate trends towards elimination	All 22 countries show positive trends towards elimination.
Implementation units demonstrate trends towards elimination Cross-border issues identified and addressed	All IUs showing positive trends towards elimination
Extent of implementation of recommendations of cross-border meetings	All recommendations of cross-border meetings implemented.

Strategic objective 4

Expand support to onchocerciasis and LF to three new countries

Indicator	Targets
Number of new countries and partners supported to scale up onchocerciasis and LF programme activities	3 new countries supported by 2016.
All the indicators of strategic objective 1	As in objective 1.

Strategic objective 5

Promote a systems response to the delivery of elimination of onchocerciasis and LF with other health interventions.

Indicator	Targets
Number of countries strengthening the six health system building blocks through the MDA strategy	All 22 countries engage with national NTD programmes.
Number of interventions delivered using the CDTI strategy	At least four in each country.
Number of integrated NTD programmes developed and supported	At least one NTD programme in 50% of 22 countries

Strategic objective 6

Strengthen surveillance activities in 22 supported countries

Indicator	Targets
Functional laboratory-based surveillance teams existing in countries	9 countries by 2015. 13 countries by 2020
Number of countries carrying out annual laboratory based surveillance activities to provide evidence for progress.	9 countries by 2015. 13 countries by 2020
Outcome of the evaluation of the transmission assessments/surveys of *O. volvulus* and *Wucheria bancrofti* in areas under MDA (impact indicator)	Positive trends towards elimination in all 21 countries (as compared to pre-control levels)
Progress on research activities aimed at assessing the incidence of trans-border elimination activities	One study carried out per year, per region in potential cross-border transmission zones as in 6.5.
Integration of onchocerciasis and LF surveillance into national disease surveillance systems	All 21 countries

Strategic objective 7

Promote research and the generation of evidence for programme planning, policy development and strengthening of the health system

Indicator	Targets
Number of operational research projects undertaken and published in collaboration with country & international partners	At least two research papers published per annum per region.
Extent of implementation of research findings by national programmes	
Health system research undertaken in collaboration with WHO/TDR	At least 5 over the plan period.

Strategic objective 8

Increase profile and prioritisation of elimination for onchocerciasis and LF with decision makers and funders, to meet funding gap for sustainable elimination programmes

Indicator	Targets
Onchocerciasis, LF and other NTDs presented and prioritised in international frameworks and processes.	All donors outlined under Driver 7
Increased funding to Sightsavers as grantee of choice for new and old funding streams for onchocerciasis and LF.	150% increase above the 2011 commitment
Increased number of national and international funds for HMIS and surveillance activities.	
Increased number of national governments in countries endemic for NTDs demonstrating increased leadership and investment to achieve elimination of onchocerciasis and LF	80% of national governments

Table 5: Overview of Monitoring and Evaluation Framework

7.0 Verification of elimination of onchocerciasis and lymphatic filariasis

WHO verification guidelines for onchocerciasis elimination called Onchocerciasis, Guidelines for stopping mass drug administration and verifying elimination of human onchocerciasis: Criteria and procedures, WHO 2016 (www.who.int/onchocerciasis/resources/9789241510011/en/) recommend that foci where MDA has been stopped should continue post-treatment surveillance for a minimum of three years. If no recrudescence of infection is detected during this period, then *O. volvulus or W. bancrofti* can be declared to have been eliminated from that focus. However, verification of elimination can be considered by WHO only when elimination of the disease has been achieved for the entire country, not only selected foci.

Verification of elimination of onchocerciasis and validation of elimination of LF consists of the following:

- compiling and analysing all data on onchocerciasis and LF in the country
- preparing a national dossier
- submitting the dossier to WHO Headquarters and the Regional Programme Review Group respectively

Degbe Ablavi and her daughter Sitchope at home. Degbe has suffered from LF since 2005.

8.0 Risk assessment and mitigation strategies

Risk	Impact analysis **1** = Low **2** = Medium **3** = High			Mitigation strategy
	Significance	Likelihood	Overall	
Inability to raise sufficient funding to maintain level of support and intervention needed.	**2**	**2**	**4**	Develop a joint resource mobilisation strategy for NTDs. Develop a business case based on value for money and results of successes in elimination. Engage in a consortium approach to raise funds.
Governments of endemic countries do not honour their financial commitment.	**2**	**2**	**4**	Engage in high powered advocacy visits to countries to maintain government commitment and ownership.
Slow progress in post-conflict countries (CAR, South Sudan, DRC, Angola).	**3**	**3**	**9**	Work with partners who are experienced in working in these countries.
Increase of conflict in endemic countries, interrupting interventions.	**2**	**2**	**4**	Pay attention to displaced populations or nomadic populations. Intensify cross-border collaboration. Work with broader range of partners particularly emergency and relief NGDOs.

Risk	Impact analysis **1** = Low **2** = Medium **3** = High			Mitigation strategy
	Significance	Likelihood	Overall	
Serious adverse events where onchocerciasis and lymphatic filariasis are co-endemic with *Loa loa* leading to high ivermectin treatment refusals and where ivermectin and albendazole cannot be used.	**3**	**2**	**6**	Follow the WHO protocol for managing *Loa loa* co-endemicity, new regimen of using albendazole only; and alternative treatments as they become available.
The low grading of WHO in the recent value for money assessment leading to reduced funding to WHO.	**2**	**1**	**2**	Monitor the impact of the assessment. Review and adjust plans as may be necessary. Identify alternative sources of funding.
Insufficient funding to special projects to eliminate 5PC-NTDs due to differences of approach by major funding partners.	**2**	**2**	**4**	Engage in advocacy and awareness creation on the need to support the ESPEN. Support resource mobilization for elimination of NTDs.
Programme changes arising from redefinition to ESPEN beyond 2015 affecting implementation.	**3**	**1**	**3**	Engage in the redefinition of the role of the ESPEN beyond 2015. Review strategy in light of the changes.
Inadequate numbers of epidemiologists and entomologists for training in onchocerciasis and LF surveillance.	**2**	**2**	**4**	Consider a regional approach to capacity development. Engage with WHO/TDR, universities and research institutions for grants to help partners access institutional capacity strengthening grants and training.

Risk	Impact analysis **1** = Low **2** = Medium **3** = High			Mitigation strategy
	Significance	Likelihood	Overall	
Inadequate commitment to cross-border collaboration by project staff and governments.	**2**	**2**	**4**	Work with regional health authorities to coordinate cross-border collaboration eg Nile Basin Initiative, WAHO etc.
Population and fly migrations re-introducing infections to transmission zones/ countries where elimination had been achieved.	**2**	**2**	**4**	Engage with universities and research institutions. Support studies on population and fly migration. Support ongoing surveillance.
Onchocerca volvulus strains become resistant to ivermectin.	**3**	**1**	**3**	Ensure high coverage. Twice yearly treatment where transmission is ongoing and The use of alternative therapies, eg doxycycline if cases are suspected. Be informed and encourage the ongoing work on the development of molecular tools for monitoring of resistance. Modellers to inform definitions of resistance that address the wide variations of biological response to ivermectin. Review and adjust plans as may be necessary.

Table 6: Risks assessment and mitigation strategies

9.0 Conclusion

The implementation of this flagship programme will protect 45 million treatments a year for onchocerciasis and support 80 million treatments a year for LF. The integrated approach used in the implementation will enable scale-up of not only oncho and LF but also other NTDs. It will provide an opportunity for advocacy at global and national levels and enable partners to mobilise resources required for scale-up, sustain coverage and support research. This initiative will also strengthen human resource for programme implementation and surveillance, for example in mHealth, data management and reporting. As a result, the programmes we support will interrupt transmission of onchocerciasis and LF on the due dates and thus achieve elimination of both diseases.

Appendices

Appendix 1: Lymphatic filariasis: the disease

Lymphatic filariasis, the world's leading cause of physical disability, is caused by the parasite Wucheria bancrofti which is transmitted by mosquitoes. The third-stage filarial larvae (L3) are dropped onto the skin of a human host chosen by an infected female mosquito during its blood meal. The larvae subsequently penetrate the bite wound, invade the lymphatic system and develop into adults. The adult worms have a lifespan of 4-6 years (male and female), reside in the lymphatic system, and, after mating, produce microfilariae which circulate in the bloodstream. Microfilariae actively migrate between the lymphatic system and the bloodstream to reach the peripheral blood vessels. When another female mosquito ingests a blood meal, the microfilariae are taken into the stomach with the blood. Some microfilariae develop into infective third-stage larvae (L3), which migrate to the mosquito's proboscis, where they can continue to infect another human host when the mosquito takes a blood meal.

Lymphatic filariasis causes a wide range of acute and chronic clinical signs and symptoms such as acute attacks, elephantiasis and hydrocele.

In Africa the parasite Wucheria bancrofti is transmitted to humans in rural areas by Anopheles species mosquitoes that also transmit malaria. Culex is refractory to W.bancrofti in West Africa. In urban settings and coastal areas of East Africa, the parasite is transmitted by Culex species mosquitoes.

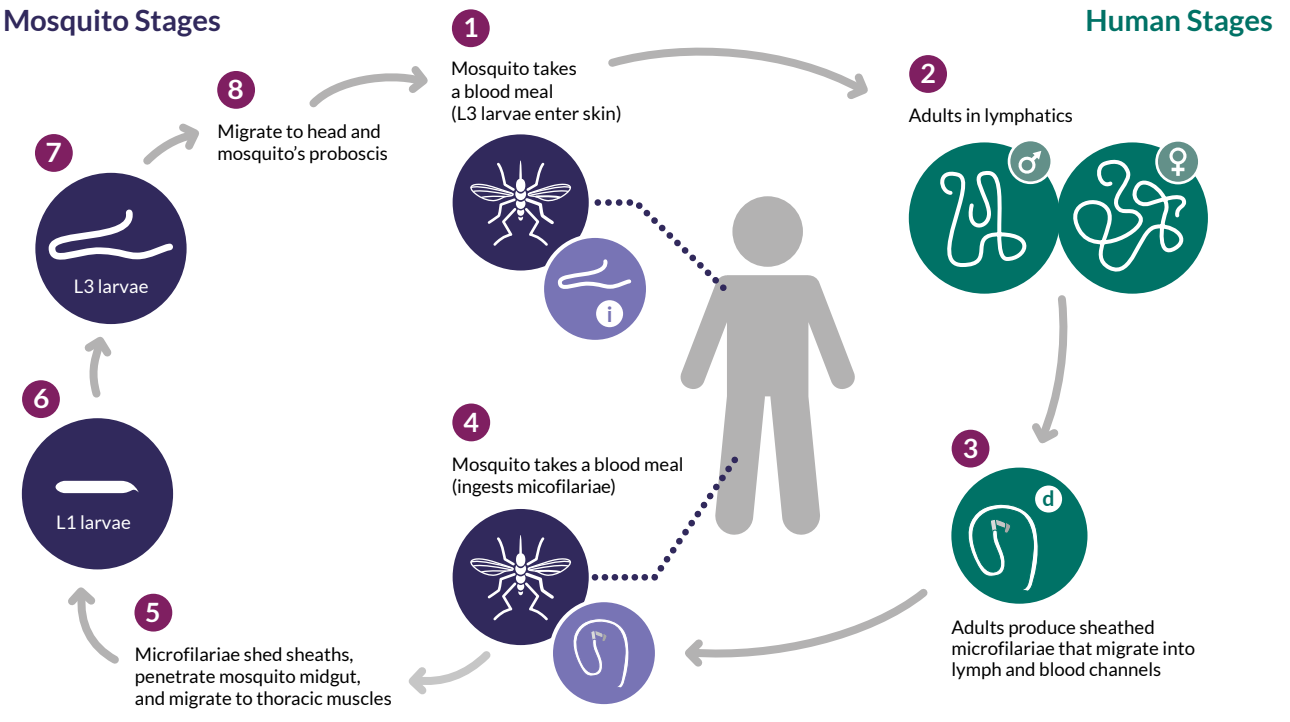


Figure 2: Lifecycle of Wucheria bancrofti

Appendix 2: Onchocerciasis: the disease

Onchocerciasis, the world's second-leading infectious cause of blindness, is caused by infection by the parasite *Onchocerca Volvulus*. Blindness from the disease is irreversible. The parasite is transmitted to humans through the bite of a black fly which injects immature larval forms of the parasite (infective larvae) into their human host. The larvae migrate to the subcutaneous tissue where they undergo further development and form skin nodules as they mature into adult worms (macrofilaria). The adult worms mate and produce millions of microscopic larvae (microfilaria); this continues for 10-15 years of the adult worm's life. The microfilariae migrate to the whole body and trigger intense inflammatory reaction. Its resultant morbidity includes skin symptoms, ocular involvement and general debilitation. The black flies, which feed during the day, ingest the microfilaria which further undergo development within the black flies into infective larvae; ready for transmission to the next human victim. The disease tends to be severe in western and central Africa where it causes both skin disease and blindness with decreasing severity towards the eastern and southern parts of the continent where it manifests mainly as skin disease. The life cycle of *Onchocerca* is illustrated in Figure 3.

In Africa, there are two dominant species of the black fly vector; *Simulium damnosum* and *Simulium neavi*. The black flies deposit their eggs in fast flowing rivers where water is highly oxygenated and from which young adult flies emerge. Unlike the *S. damnosum*, crabs are the larval site for the *S. neavi*. *S. damnosum*, found mainly in west and central Africa, is known to fly distances as long as 400 km and can thereby carry infection to distant locations. Garms, Walsh and Davies (1979) first reported reinvasion of the Onchocercoasis Control Programme (OCP) area. and Baker et. al. (1990), reported *S. damnosum* and *S. sirbanum*, which had been eliminated in the OCP countries had reinvaded Guinea, Sierra Leone, western Mali, Senegal and Guinea Bissau; a finding which led to a resumption of larviciding of potential breeding sites. On the other hand, S. neavi found mainly in Eastern and Southern Africa, flies short distances of up to 4 km and mainly causes skin disease.

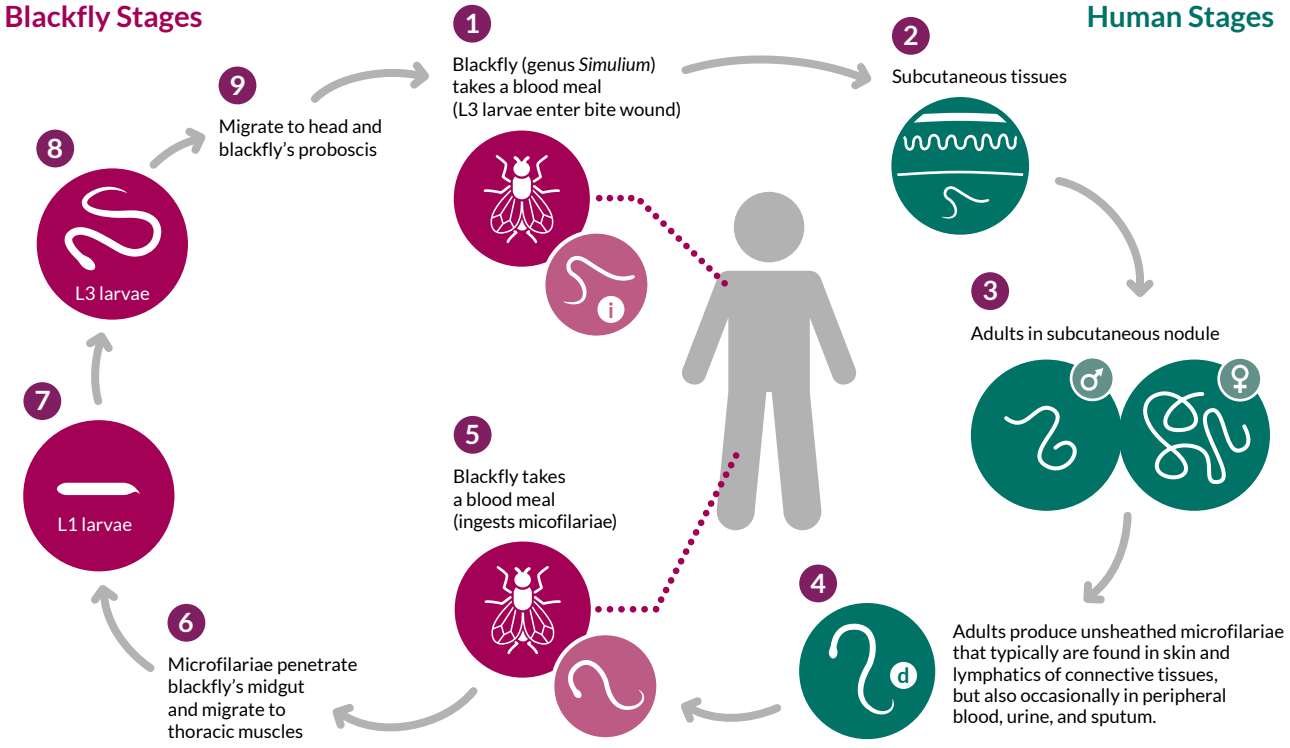


Figure 3: Life cycle of Onchocerca volvulus (CDC)

i Infective stage d Diagnostic stage

Appendix 3: Five year detailed budget

Sightsavers onchocerciasis and LF plan for elimination of tranmission of onchocerciasis in Sightsavers supported projects

Based on the onchocerciasis and LF plan for elimination all in GBP (£)
Intervention Logic

Description	2016	2017	2018	2019	2020	Total (£)
Programme Administration						
Epidemiologist	41,958	41,958	48,951	48,951	52,448	**234,266**
Programme Manager	90,098	99,108	109,019	119,921	131,913	**550,059**
Office Stationery, travel	41,772	10,845	10,845	10,845	11,456	**85,763**
Total Administration	**173,828**	**151,911**	**168,815**	**179,717**	**195,816**	**870,087**
Onchocerciasis and LF for 10 countries						
Leadership and Governance Coordination Mechanism, M&E, Cross Border meeting, Impact Assessment, Surveillance and Research	730,722	561,297	420,901	115,909	129,895	**1,958,724**
Sub-total	**730,722**	**561,297**	**420,901**	**115,909**	**129,895**	**1,958,724**
Health Work Force CDDs, Health Workers, Entomology Technicians, Fly Catchers, Data Manager	548,689	382,860	245,492	597,902	597,902	**2,372,845**
Sub-total	**548,689**	**382,860**	**245,492**	**597,902**	**597,902**	**2,372,845**
Health Information System - HIS Management Information System	88,719	85,638	67,008	11,014	28,497	**280,875**
Sub-total	**88,719**	**85,638**	**67,008**	**11,014**	**28,497**	**280,875**
Medecines, Supplies and Technologies Management of SAEs, Supplies, Technologies	694,653	347,036	281,687	6,993	6,993	**1,337,362**
Sub-total	**694,653**	**347,036**	**281,687**	**6,993**	**6,993**	**1,337,362**
Service Delivery Health Education, Sensitisation, Advocacy & Mobilisation (HSAM), Mass Drug Administration, Scaling up, Disease Management and Disability Inclusion (DMDI)	301,725	421,342	239,286	55,944	55,944	**1,074,241**
Sub-total	**301,725**	**421,342**	**239,286**	**55,944**	**55,944**	**1,074,241**
Financing International and local advoacay, Strategies to improve financing of NTDs	930,990	974,989	1,067,174	815,312	770,199	**4,558,664**
Sub-total	**930,990**	**974,989**	**1,067,174**	**815,312**	**770,199**	**4,558,664**
Total Building Block	**3,295,498**	**2,773,162**	**2,321,548**	**1,603,074**	**1,589,430**	**11,582,712**

Description	2016	2017	2018	2019	2020	Total (£)
Fragile states						
Cote d'Ivoire	647,284	619,323	397,951	34,965	34,965	**1,734,489**
Democratic Republic of Congo	97,468	77,081	37,737	48,951	48,951	**310,188**
South Sudan	121,029	351,454	146,464	62,937	34,965	**716,850**
Sub-total	**865,782**	**1,047,859**	**582,152**	**146,853**	**118,881**	**2,761,527**
New countries						
CAR	279,298	147,538	135,733	124,538	166,566	**853,674**
Chad	145,900	144,510	184,483	121,510	179,483	**775,886**
Yemen	151,888	118,228	128,802	130,200	107,960	**637,078**
Sub-total	**1,087,179**	**820,893**	**824,217**	**713,864**	**841,708**	**2,226,638**
Surveillance Activities						
Epidemiological and entomological surveillance activities	279,720	279,720	209,790	209,790	209,790	**1,188,811**
Sub-total surveillance	**279,720**	**279,720**	**209,790**	**209,790**	**209,790**	**1,188,811**
DMDI	140,000	145,000	155,000	160,300	165,000	**765,300**
Sub-total DMDI	**140,000**	**145,000**	**155,000**	**160,300**	**165,000**	**765,300**
ESPEN	70,000	70,000	70,000	70,000	70,000	**350,000**
Sub-total ESPEN	**70,000**	**70,000**	**70,000**	**70,000**	**70,000**	**350,000**
Grand Total	**5,191,914**	**4,662,930**	**3,731,323**	**2,515,684**	**2,567,926**	**18,669,776**

Appendix 4: Country situation summaries as of July 2014

1. Benin

Sightsavers supports elimination of onchocerciasis in 51 (of the total 77) onchocerciasis endemic districts with a target population of 5,541,657. 4,684,393 treatments were supported in 4,619 meso and hyper-endemic communities in 2015. A total of 8,000 CDDs and 500 Primary Health Care Workers support the implementation of CDTI. The programme achieved an average GCR of 99% and TCR of 85% over the period of its implementation. Mapping of NTDs has been completed (Map 15) and shows the endemicity of NTDs in the country. Onchocerciasis and lymphatic filariasis are co-endemic in 50 districts with an at risk population of 3,092,937. The treatments supported in 2015 were 1,631,438. There is an integrated NTD programme.

Semi-annual treatment is taking place in 11 of the 51 endemic districts to fast track elimination of onchocerciasis; a consistently annual GCR of 100% and TCR of 80% is required for elimination to be achieved. Good progress has been made towards elimination of onchocerciasis based on the results of epidemiological and entomological surveys.

Strengths and opportunities:

- Integration of CDTI into the peripheral health system.
- Timely availability of donated medicines.
- Experienced onchocerciasis team.

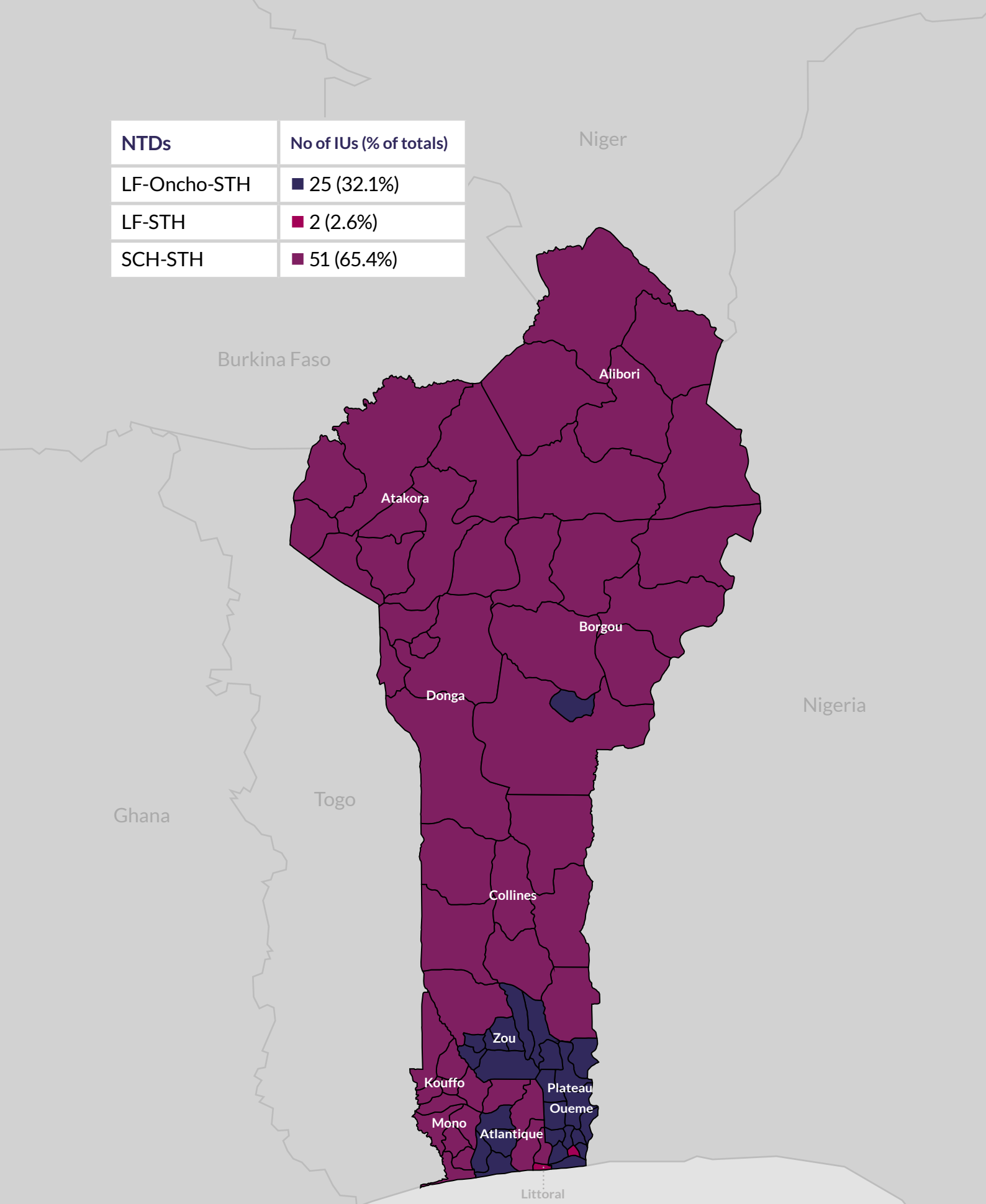
Challenges and weaknesses:

- Lack of coordination with LF supporting NGOs.
- Inadequate HR capacity
- Inadequate kits for epidemiological and entomological surveillance.

NTD reference key

LF	Lymphatic filariasis
Oncho	Onchocerciasis
STH	Soil transmitted helminthiasis
SCH	Schistosomiasis

NTDs	No of IUs (% of totals)
LF-Oncho-STH	25 (32.1%)
LF-STH	2 (2.6%)
SCH-STH	51 (65.4%)



Map 3: Endemicity of NTDs in Benin

2. Burkina Faso

Sightsavers supports the onchocerciasis programme in two onchocerciasis endemic districts in the country. Four other endemic districts are supported by HKI. All NTDs have been mapped but the endemicity of onchocerciasis needs to be refined (Map 4). LF is endemic in 70 districts, with six of these being co-endemic for onchocerciasis. Sightsavers does not support the elimination of LF, STH and SCH in the country.

The national NTD control and elimination programme covers the 5 PCT NTDs. The Onchocerciasis Elimination Expert Advisory Committee set up in 2015 held its first meeting in April 2016. LF MDA is ongoing in 41 health districts. 22 health districts have passed TAS and stopped treatment. Entomological surveillance was carried out in 2012 in Sightsavers supported areas.

Semi-annual treatment is carried out in the hot spots, the GCR for 2012 was 100%, TCR was 69.87%.

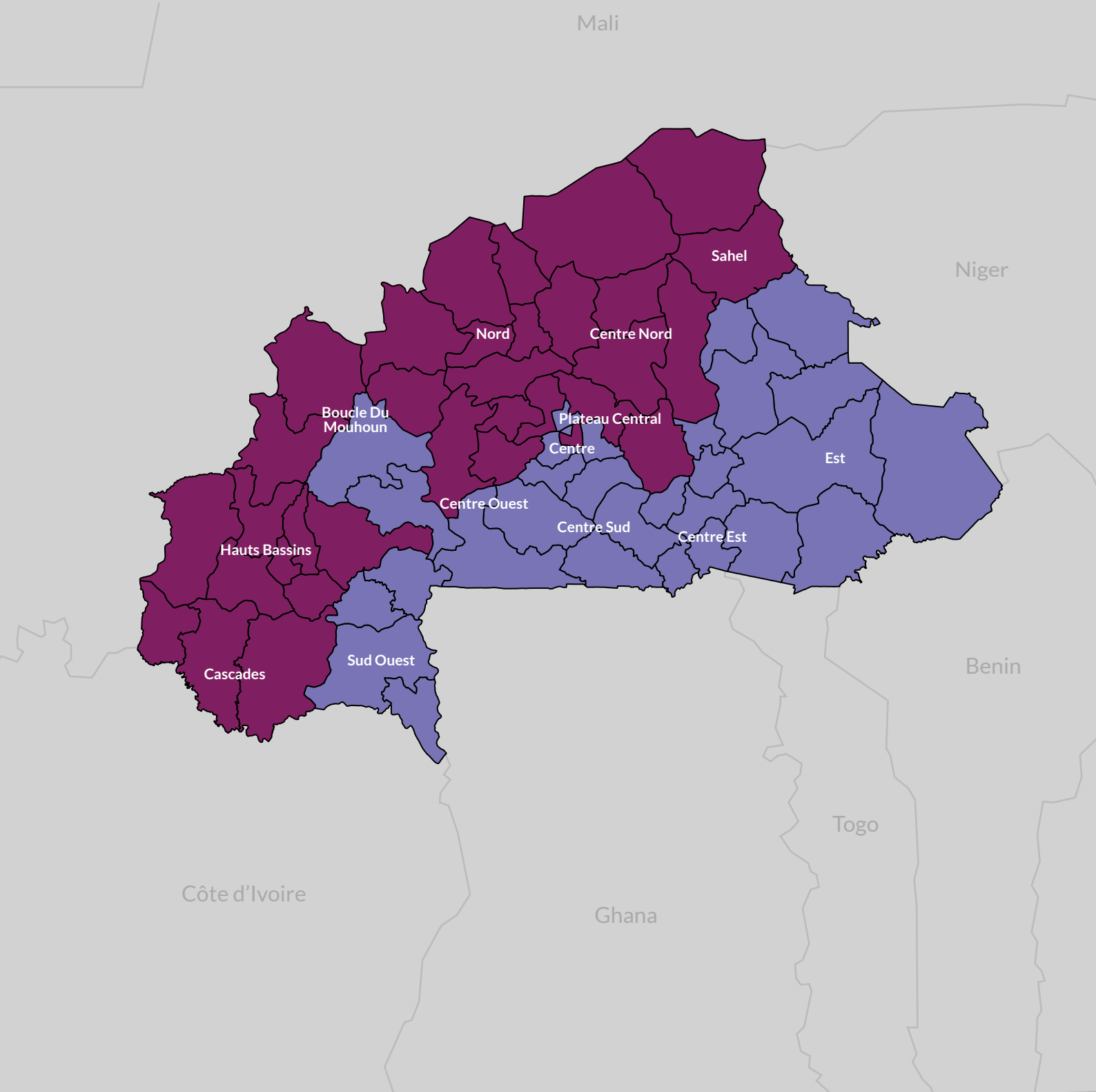
Strengths and opportunities:

- Existence of NTDs National Plan
- Existence of a master plan for NTDs
- Existence of the integrated communication plan
- Existence of partners

Challenges and weaknesses:

- Inadequate human resources for epidemiological and entomological surveillance
- Inadequate community involvement in MDA
- Inadequate funding from government
- Risk of cross border infection

NTDs	No of IUs (% of totals)
LF-Oncho-STH-Trachoma	30 (47.6%)
SCH-STH	33 (52.4%)



Map 4: Endemicity of NTDs in Burkina Faso

3. Cameroon

Sightsavers supports four out of fifteen onchocerciasis projects in Southwest, Northwest and West regions. These projects cover a total population of 4,925,991 in 5183 endemic communities which represent 47% of the 10,288,594 at risk population in the country. The Sightsavers supported projects treated 4,043,615 representing 53.35% of people treated in the country. National scale-up of the onchocerciasis programme has been achieved and all the projects are supported by NGDOs. 20,704 CDDs and 726 health workers supported the implementation of CDTI in 2015. The GCR and TOR achieved on average 100% and 82% over the implementation period of its implementation.

The onchocerciasis programme is coordinated by a National Onchocerciasis Task Force which was created in 2002. With the integration of other NTDs in 2010, a Sub-Directorate of Malaria and NTDs was created at the MOH in 2011 to coordinate NTDs control/elimination. Both committees are functional. Sightsavers, HKI, LCIF, IEF and Perspective support the NTDs programme and have a coalition. The Carter Center withdrew from the country in 2012 after 18 years. Mapping was completed in 2010 for the PCT-NTDs (Map 5).

The National NTDs Programme has adopted the CDTI strategy in all 10 regions of the country for PCT; all of these endemic regions are implementing an integrated NTD programme. In the North and Far North regions there is also an additional intervention with trachoma. The Sightsavers LF supported projects target a population of 4,471,574 in 4,668 endemic communities representing 25% of the 17,325,938 national at risk population. 3,670,064 people were treated by the Sightsavers supported projects representing 32% of the total number of people treated. The population living in this area is 50% of the at risk population in the oncho-endemic areas. National scale-up of the LF programme has been achieved and all projects have NGDO partners. 19,300 CDDs and 715 health workers supported treatments in 2015. The programme achieved an average GCR of 100% and TCR of 82% over the period of its implementation.

Strengths and opportunities:

- Integrated NTDs elimination programme
- Completion of mapping of *Loa loa* and NTDs,
- Functional National NTDs coordination mechanism
- Availability of human resources for transmission assessment surveys

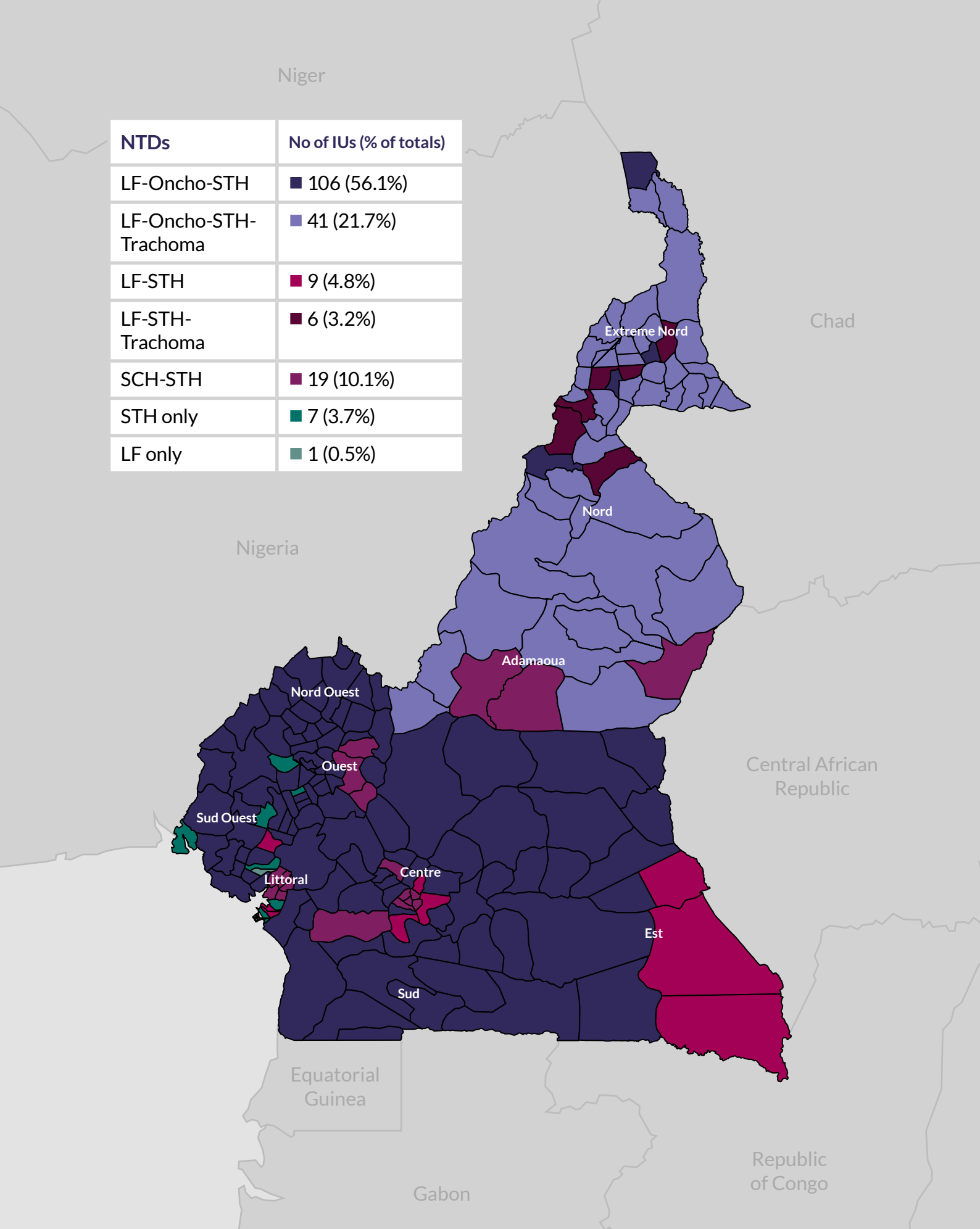
Challenges and weaknesses:

- *Loa loa*-onchocerciasis co-endemicity
- Lack of/ and or insufficient incentives to CDDs.
- Inadequate human resources for programme implementation
- Inadequate logistics

One of the greatest challenges facing the national NTDs programme is the co-endemicity of Loasis and onchocerciasis in 8 of 10 regions. The endemicity which is highest in the country, increases the risk of severe adverse effects during MDA, fear and refusals in the population. The programme uses the recommended protocol for management of SAEs and receives support from a technical advisor on SAEs.

Epidemiological surveys for onchocerciasis conducted in West project (2010) and South West (2012) projects showed an overall decline in prevalence compared to the pre-treatment levels. Transmission assessment surveys for LF are planned for 2017.

NTDs	No of IUs (% of totals)
LF-Oncho-STH	106 (56.1%)
LF-Oncho-STH-Trachoma	41 (21.7%)
LF-STH	9 (4.8%)
LF-STH-Trachoma	6 (3.2%)
SCH-STH	19 (10.1%)
STH only	7 (3.7%)
LF only	1 (0.5%)



Map 5: Endemicity of NTDs in Cameroon

4. Côte d'Ivoire

Onchocerciasis is currently endemic in 59 of 82 health districts in the country, putting 2,147,097 of the population at risk. Lymphatic filariasis is endemic in 63 districts with 18,393,569 at risk of infection. Sightsavers' support to the country started in 2012 in 59 onchocerciasis endemic districts, HKI supported 5 endemic districts in 2012 and 2014. Most of the other districts are supported by APOC. LF support commenced in 2013. There are 47 onchocerciasis endemic districts co-endemic with lymphatic filariasis with an at risk population of 16,416,000.

There is no National Coordination for the elimination of NTDs or technical National committee. However there are two National Programmes: the National Programme for Eye Health, and Onchocerciasis Control and National Programme for Schisto, STH and Lymphatic Filariasis Control. The two programmes work separately.

Four PCT NTDs have been mapped (Map 6). The delineation of transmission zones is pending.

Annual treatment in the country has been inconsistent due to lack of funding. In 2013 Sightsavers supported 219,063 onchocerciasis treatments using 1,003 CDDs.

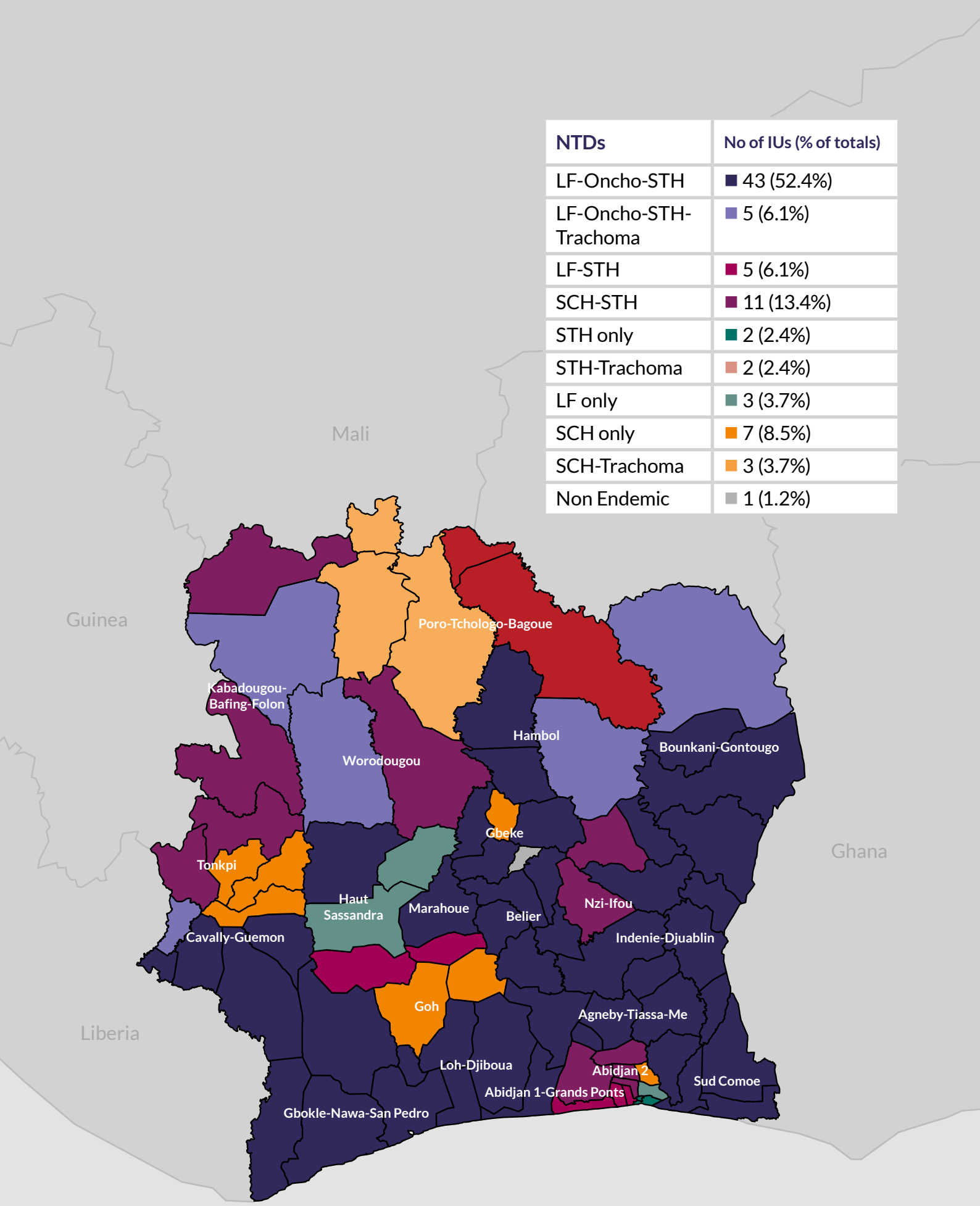
Strengths and opportunities:

- Political commitment of government
- Commitment of partners to integrate the elimination of NTDs.

Challenges and weaknesses:

- Irregular geographic and therapeutic coverage rates due to inadequate support from NGO partners
- Insecurity and movement of the populations
- Risk of cross border infection
- Inadequate capacity and technology for epidemiological and entomological surveillance at national and regional levels.

NTDs	No of IUs (% of totals)
LF-Oncho-STH	43 (52.4%)
LF-Oncho-STH-Trachoma	5 (6.1%)
LF-STH	5 (6.1%)
SCH-STH	11 (13.4%)
STH only	2 (2.4%)
STH-Trachoma	2 (2.4%)
LF only	3 (3.7%)
SCH only	7 (8.5%)
SCH-Trachoma	3 (3.7%)
Non Endemic	1 (1.2%)



Map 6: Endemicity of NTDs in Côte d'Ivoire

5. Republic of Congo

In 1992 the Programme National de Lutte contre l'Onchocercose was established, and distribution of ivermectin started. APOC's intervention and the use of CDTI started in 2001.

The results of epidemiological onchocerciasis evaluations undertaken in Bouenza department in 2011 showed an absence of infection in 8 of the 10 villages surveyed and prevalence below the threshold of 1% in the other two villages. Further epidemiological surveys in previously hypoendemic areas showed them to be endemic. In the area that had been under CDTI the prevalence of onchocerciasis was particularly high in five villages sampled in the district of Boko bordering the Democratic Republic of Congo.

Sightsavers provides support to the MOH through OPC. In 2013 the programme supported 627,442 onchocerciasis treatments through 1,921 CDDs.

Onchocerciasis is co-endemic with loasis in some hypo endemic areas in the regions of du Niari and du Kouilou. Mapping of LF is completed (Map 7) and it is coendemic with onchocerciasis in parts of du Niari, de la Bouenza and du Pool. In 2013 LF MDA commenced in the onchocerciasis CDTI areas where LF is co-endemic. Delineation of transmission zones is yet to be completed.

The Death to Onchocerciasis and Lymphatic Filariasis (DOLF, www.dolf.wustl.edu) project has supported a 3-year community trial to evaluate the effects of biannual mass treatments with albendazole alone on lymphatic filariasis and soil-transmitted helminthiases. The results of this trial will have an impact on treatment in areas co-endemic with *Loa loa* beyond the country.

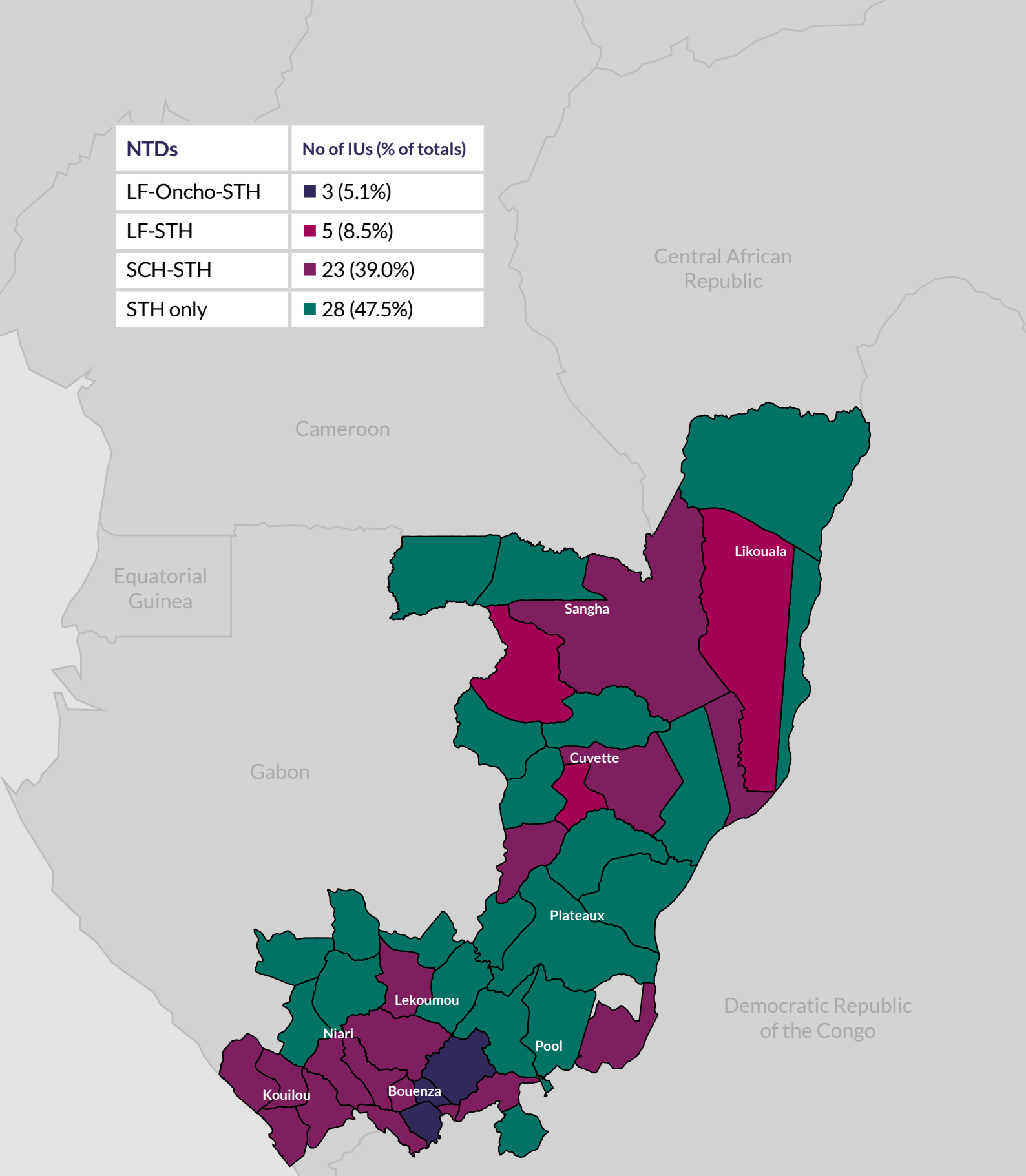
Strengths and opportunities:

- Strong MOH leadership
- Assimilate results from operational research projects considering LF treatment strategies where loaisis is a concern
- Coordination of strengthening of HR capacity for entomological surveillance for both LF and onchocerciasis

Challenges and weaknesses:

- Poor progress towards onchocerciasis elimination in some areas – especially where there has been conflict
- Incomplete LF mapping
- Cross-border risks from highly onchocerciasis endemic areas of DRC
- Inadequate financial resource mobilisation for extension of LF/ onchocerciasis MDA areas and surveillance activities

NTDs	No of IUs (% of totals)
LF-Oncho-STH	3 (5.1%)
LF-STH	5 (8.5%)
SCH-STH	23 (39.0%)
STH only	28 (47.5%)



Map 7: Endemicity of PCT NTDs in Republic of Congo

6. Democratic Republic of Congo (DRC)

Onchocerciasis is widely distributed across DRC with an estimated population of 32,157,629 habitants (45.7% of the total population) living in hyper/meso endemic areas[4]. In 1996, the National Programme for the Control of Onchocerciasis (Programme National de lutte contre l'Onchocercose, PNLO) was established, taking effect in 1998. The year 2000 marked the first year of CDTI. Through the NGDO the 'United Front Against Riverblindness' Sightsavers supports the PNLO with three of the 21 CDTI projects in DRC; Ituri Nord in Oriental province, Lubutu in Maniema province and Katanga Sud in Katanga province. Of a target population of 1,855,874, 1,728,574 treatments were supported in 2,680 meso and hyper-endemic communities in 2015. A total of 14,922 CDDs and 401 Primary Health Care Workers support the implementation of CDTI. The programme achieved an average GCR of 100% and TCR of 81%.

Integrated mapping of NTDs has been completed and shows the endemicity of NTDs in the country (Map 8). There is an integrated NTD programme. Onchocerciasis and lymphatic filariasis are co-endemic in 8 districts with an at risk population of 899,607. The treatments supported in 2015 were 404,494.

There are existing structures for coordination of NTDs supporting rollout of other PCT NTDs.

DRC is one of the few countries that has had a serious problems with *Loa loa* related serious adverse events and even deaths[5]. Areas with a high prevalence of Loa loa (ie RAPLOA prevalence > 40%) are particularly known from the NE of the country[6].

Strengths and opportunities:

- Establishment of NTD programme by government
- Support from new partners (LSTM, SCI and ENDFund) for LF, schistosomiasis and STH MDA
- Adoption of biannual treatment to accelerate reduction in onchocerciasis transmission
- Research to assess changing dynamic of CDTI platform as new PCT NTDs are added

Challenges and weaknesses:

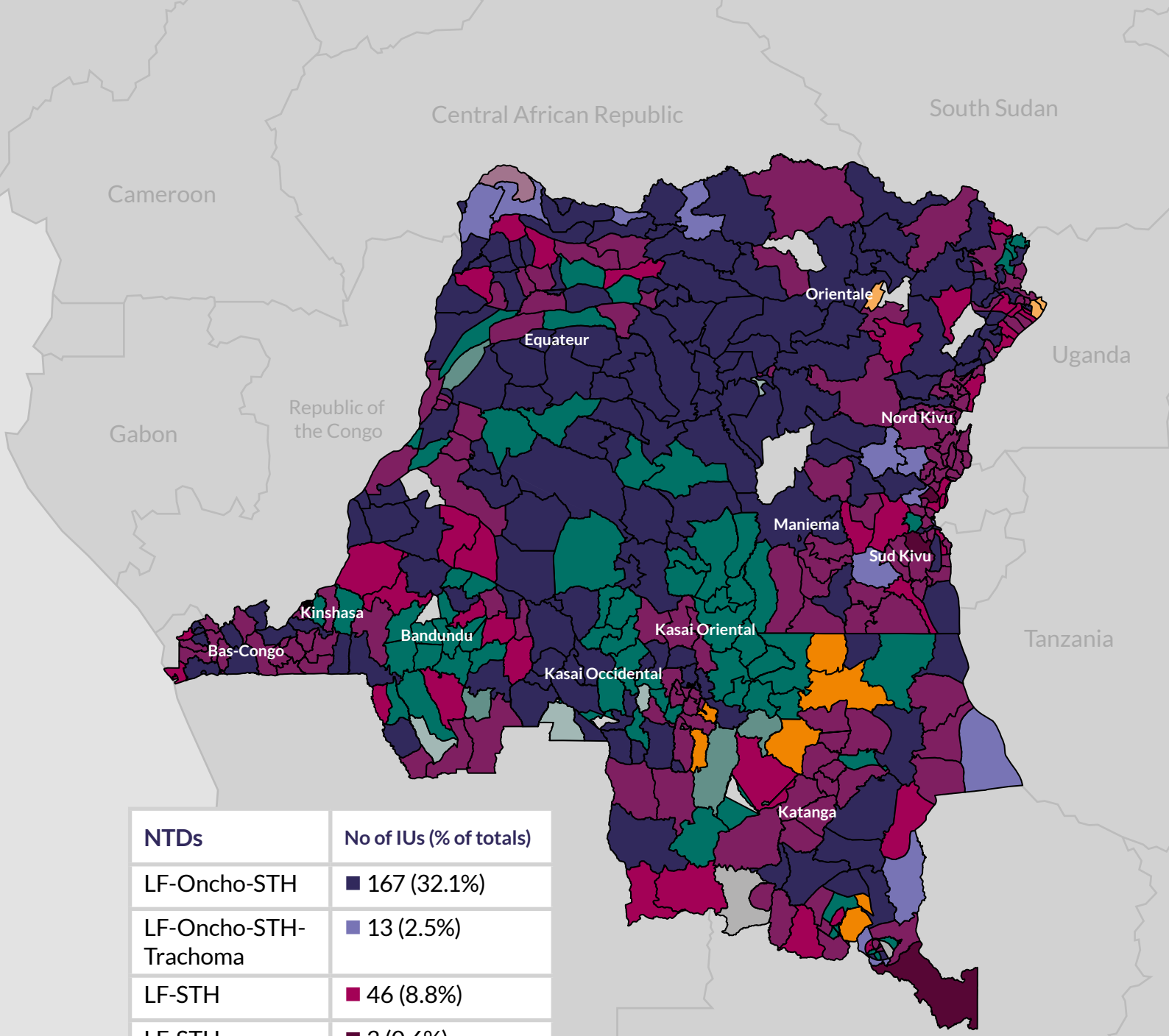
- Limited HR capacity and weak governance structures in MOH at all administrative levels
- GCR and TCR in several areas has been poor due to conflict
- Risk of conflict compromising continuity of efforts and geographic / therapeutic coverage
- Insufficient support for transport of drugs to beneficiary communities

Mapping of all PCT NTDs is nearly complete but there are challenges with LF diagnostics / establishment of sentinel sites (mf counts were zero in all proposed sentinel sites in Bas Congo and Katanga). Extension of CDTI into hypoendemic zones and start of LF MDA in non-CDTI areas was challenging due to high prevalence and intensity of *Loa loa* in some districts.

4. Source : Report of 'Deuxieme forum des partenaires de la lutte contre les maladies tropicales négligées en RDC', Kinshasa, 22-24 Jan 2014

5. In 2004 *Loa loa* related serious adverse events and even deaths were recorded in the Bas-Congo and Tshopo CDTI projects, resulting in the stopping of CDTI activities in these projects for several years.

6. For review of main studies see Kelly-Hope et al (2011) Lymphatic filariasis in the Democratic Republic of Congo; microstratification overlap mapping (MOM) as a prerequisite for control and surveillance. *Parasites and Vectors*. 4:178



NTDs	No of IUs (% of totals)
LF-Oncho-STH	167 (32.1%)
LF-Oncho-STH-Trachoma	13 (2.5%)
LF-STH	46 (8.8%)
LF-STH-Trachoma	3 (0.6%)
SCH-STH	192 (36.9%)
STH only	76 (14.6%)
LF only	6 (1.2%)
SCH only	7 (1.3%)
SCH-Trachoma	3 (0.6%)
Oncho only	4 (0.8%)
Oncho-Trachoma	1 (0.2%)
Non Endemic	40% K

Map 8: Endemicity of NTDs in Democratic Republic of Congo

7. Ghana

The Ghana Onchocerciasis Programme, up until 2012, supported onchocerciasis and LF in four of the ten endemic regions; Western, Eastern, Ashanti and Volta regions (Map 9). However, in 2012, the rest of the six endemic regions were also taken on board as Ghana transitioned from control to elimination phase. The implementation of the programme is coordinated by the NTD Task Force which ensures that activities are carried out in collaboration with NGDO partners and teams at all levels of government. A semi-annual treatment was started as the programmes moved to elimination. A REMO conducted in 2009 identified additional meso and hyper-endemic communities; treatment was started in 2009 in these communities.

The programme targeted a total population of 3,220,085 persons at risk of onchocerciasis in 85 endemic districts. Two rounds of distribution were carried out resulting in 5,305,801 treatments. The TCR and the GCR were 83% and 96.4% respectively. 2,410 health workers and 13,987 CDDs were trained to support the programme.

The at risk population targeted for LF treatment was 2,134,642 persons in 22 implementation units. Of these 1,754,832.75 persons were treated representing 99.8% and 82% GCR and TCR respectively. 2,410 health workers and 13,987 CDDs were trained to support the programme.

There are adequate human resources for transmission assessment surveys at national level. The summary results of transmission assessment surveys indicated that the prevalences for both onchocerciasis and LF were on the decrease. Seventy six IUs stopped MDA for LF as at 2015.

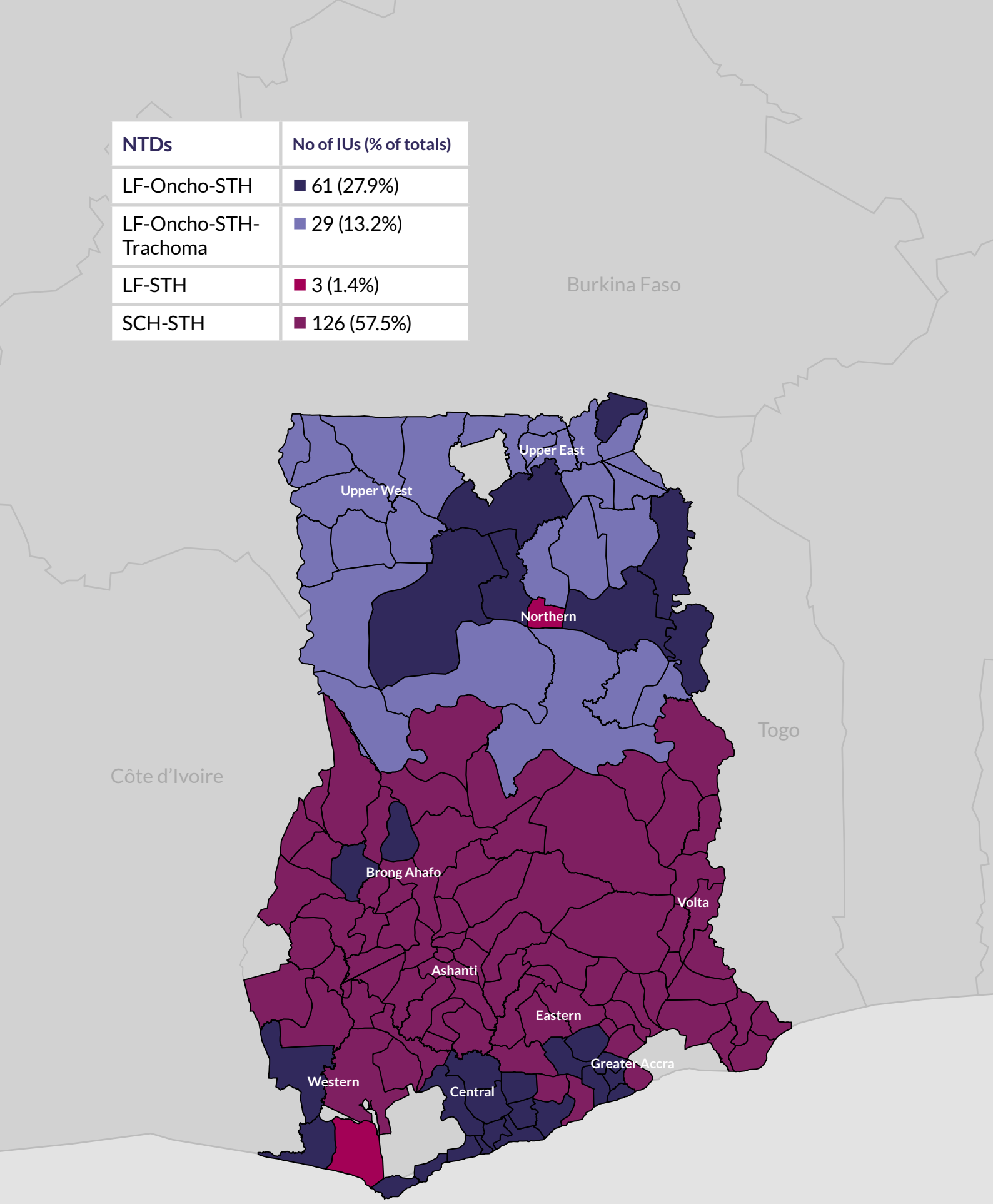
Strengths and opportunities:

- A committed and well-structured decentralized health system and community structures for programme delivery.
- Committed partners
- Integration of onchocerciasis, LF and trachoma activities.

Challenges and weaknesses:

- Succession plan for human resource for NTD surveillance at regional level
- Inability of government to sustain the programme after cessation of donor support.
- Demand for incentives by CDDs.

NTDs	No of IUs (% of totals)
LF-Oncho-STH	61 (27.9%)
LF-Oncho-STH-Trachoma	29 (13.2%)
LF-STH	3 (1.4%)
SCH-STH	126 (57.5%)



Map 9: Endemicity of NTDs in Ghana

8. Guinea

Guinea is an ex-OCP country. Sightsavers supports two projects; Moyenne Guinea CDTI and Haute Guinea CDTI which in 2015 targeted a population of 1,718,199 in 2,768 meso and hyper-endemic communities which constitute 24% of the 7,141,524 total populations at risk in the country. National scale-up of the onchocerciasis programme has been achieved but there are gaps in projects with NGDO support. A total of 5,596 CDDs and 94 health workers support the implementation of CDTI. The programme achieved an average GCR of 100% and TCR of 83% over the period of its implementation. The programme is implemented within the national NTD programme and the Regional Health Directorates structures.

There is a steering committee for the elimination of Neglected Tropical Diseases (NTD), of which Sightsavers is a member. In August 2011 the Regional and prefectural Committees were set up by the Ministry of Health.

With support from WHO/OCP Guinea was close to elimination of onchocerciasis but the conflicts in Sierra Leone and Liberia resulted in a recrudescence of the disease. 24 districts are under treatment and surveillance. The risk of recrudescence remains unless cross-border collaboration is strengthened.

Strengths and opportunities:

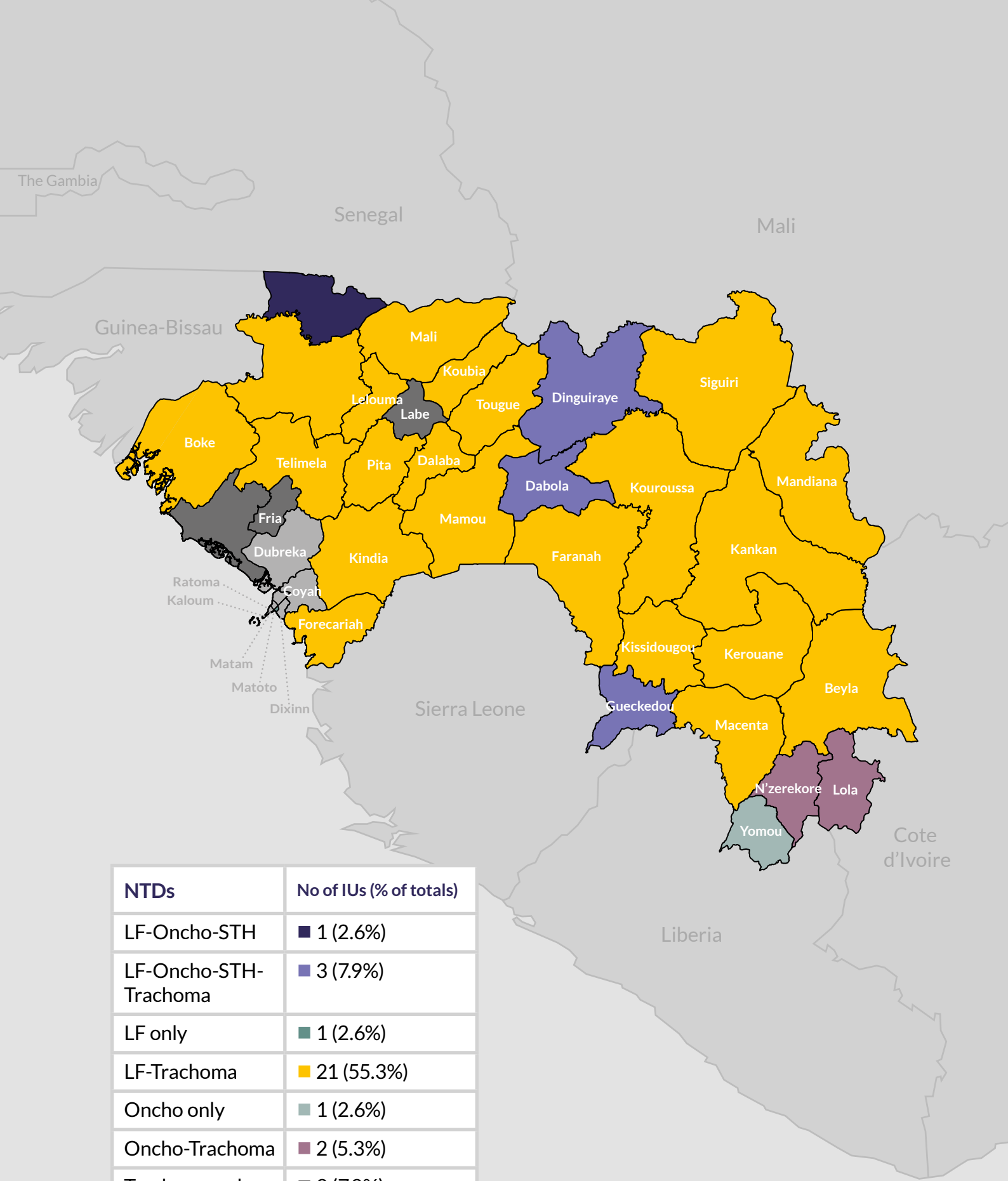
- A strong INGO partnership
- Support from WHO and WAHO
- A good collaboration with stakeholders
- Availability of technical expertise in-country for epidemiological and entomological surveys

Challenges and weaknesses:

- Potential political instability
- Cross border re-infection from Sierra Leone and Liberia
- Poor government funding
- Inadequate human resources for health impacting on monitoring and surveillance
- Low community participation.

Epidemiological and entomological surveillance is conducted annually in sentinel villages and to date the prevalence has been zero. The capacity of regional teams for epidemiological surveys has been developed but capacity for entomological surveillance is weak. There is neither an NTD programme nor a lymphatic filariasis programme. *Loa loa* is not co-endemic in the country.

Lymphatic filariasis is endemic in 24 districts, 14 of which are co-endemic for onchocerciasis (Map 10).



NTDs	No of IUs (% of totals)
LF-Oncho-STH	1 (2.6%)
LF-Oncho-STH-Trachoma	3 (7.9%)
LF only	1 (2.6%)
LF-Trachoma	21 (55.3%)
Oncho only	1 (2.6%)
Oncho-Trachoma	2 (5.3%)
Trachoma only	3 (7.9%)
Non Endemic	6 (15.8%)

Map 10: Endemicity of NTDs in Guinea

9. Guinea Bissau

Guinea Bissau is an ex-OCP country. Sightsavers supports the Bafata-Gabu CDTI project which in 2014 targeted a population of 175,850. 114,414 people were treated in 2014, with 92% GCR and 65% TCR achieved. The onchocerciasis programme is integrated into the National Eye Care Programme and is coordinated at the regional and district level by the eye care programme staff while the National Onchocerciasis Coordinator provides overall programme management. The National Onchocerciasis Coordinator is based in Gabu Region but there is no established National Steering Committee. In 2014, WHO supported the development of a draft NTD Master Plan covering the period 2014 – 2020.

Lymphatic filariasis is endemic in all parts of the country (Map 11). Bafata, Gabu and Bijagos have the highest prevalence rates in the country. National programme scale-up has not been achieved. A total of 3,100 CDDs and 12 health workers supported MDA to 294,761 of a total population of 384,810 in 2014. The GCR and TCR of 86% and 61% are low.

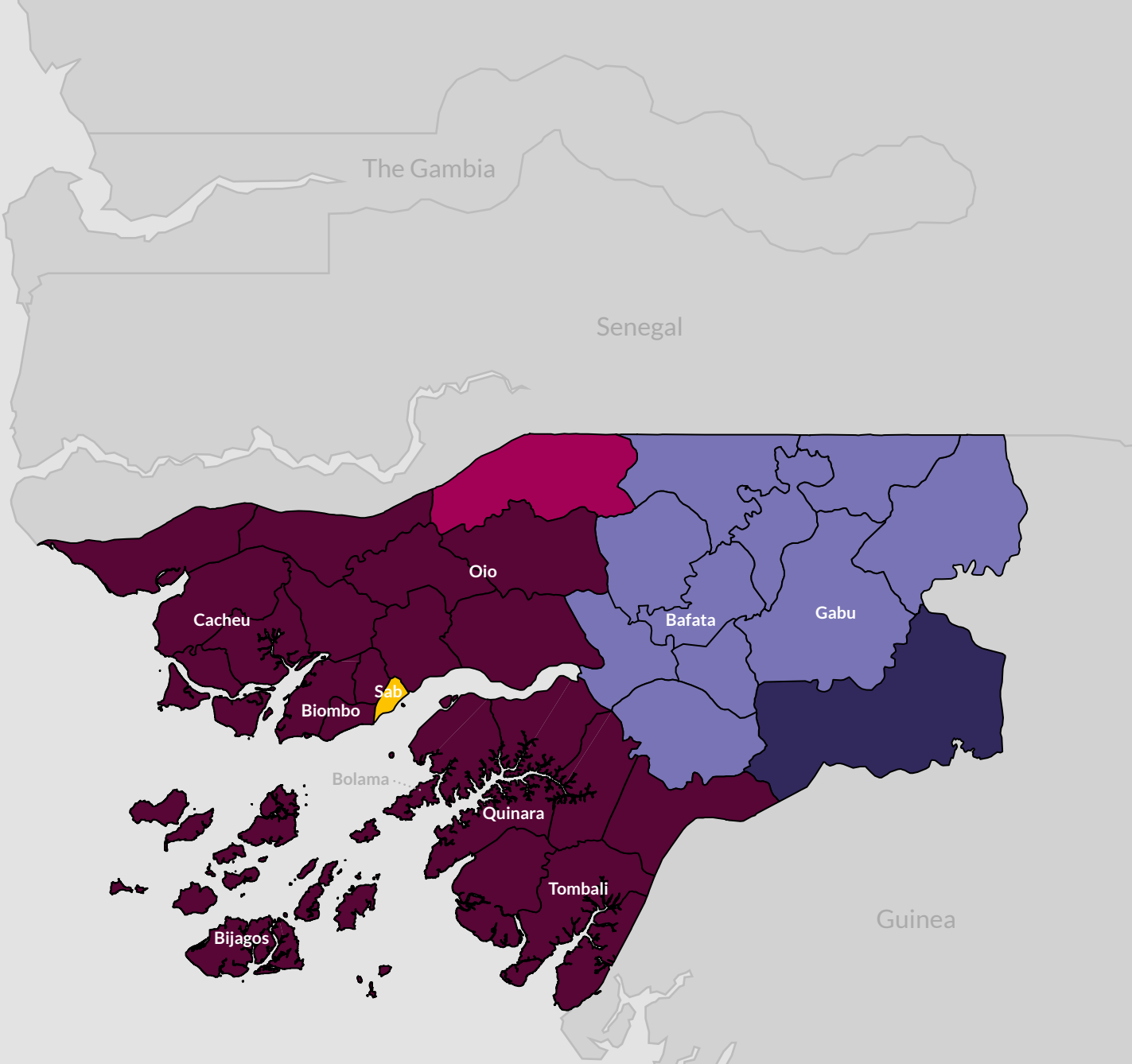
With the support of APOC, capacity for epidemiological and entomological studies has been developed over the years. Entomological surveillance surveys conducted in sentinel villages in 2007 and 2008 found low fly infection rates of 0.54% and 0.09% respectively.

Strengths and opportunities:

- Good stakeholder collaboration
- Availability of technical expertise for epidemiological and entomological studies

Challenges and weaknesses:

- Political instability
- CDD incentives
- Low community participation
- Cross border transmission zone with Guinea Conakry.



NTDs	No of IUs (% of totals)
LF-Oncho-STH	10 (8.5%)
LF-Oncho-STH-Trachoma	24 (20.3%)
LF-STH	23 (19.5%)
LF-STH-Trachoma	54 (45.8%)
LF-Trachoma	2 (1.7%)
Trachoma only	5 (4.2%)

Map 11: Endemicity of NTDs in Guinea Bissau

10. Liberia

The Liberia onchocerciasis programme supports the three CDTI projects in the country; Northwest CDTI, Southwest CDTI and Southeast CDTI projects. These projects target the entire 2,225,368 at risk population living in 3,247 meso and hyper-endemic communities in 15 endemic counties. The programme has achieved full national scale up; there are no gaps. The programme is coordinated through the NOTF and county health teams. Mapping of the NTDs has been completed (Map 12).

The target population for onchocerciasis is 3,155,572 in 5,567 communities and for LF is 2,938,370 in 4,978 communities. In 2013 10,082 CDDs and 515 health workers supported CDTI while 9,132 CDDs and 469 health workers supported LF treatments. The GCR and TCR for CDTI were 90%, and 83% respectively while those for LF were 90% and 83%. There were low coverage rates in the early years as a result of the civil war but the programme is beginning to have a turn around. No structured surveillance activities have been established.

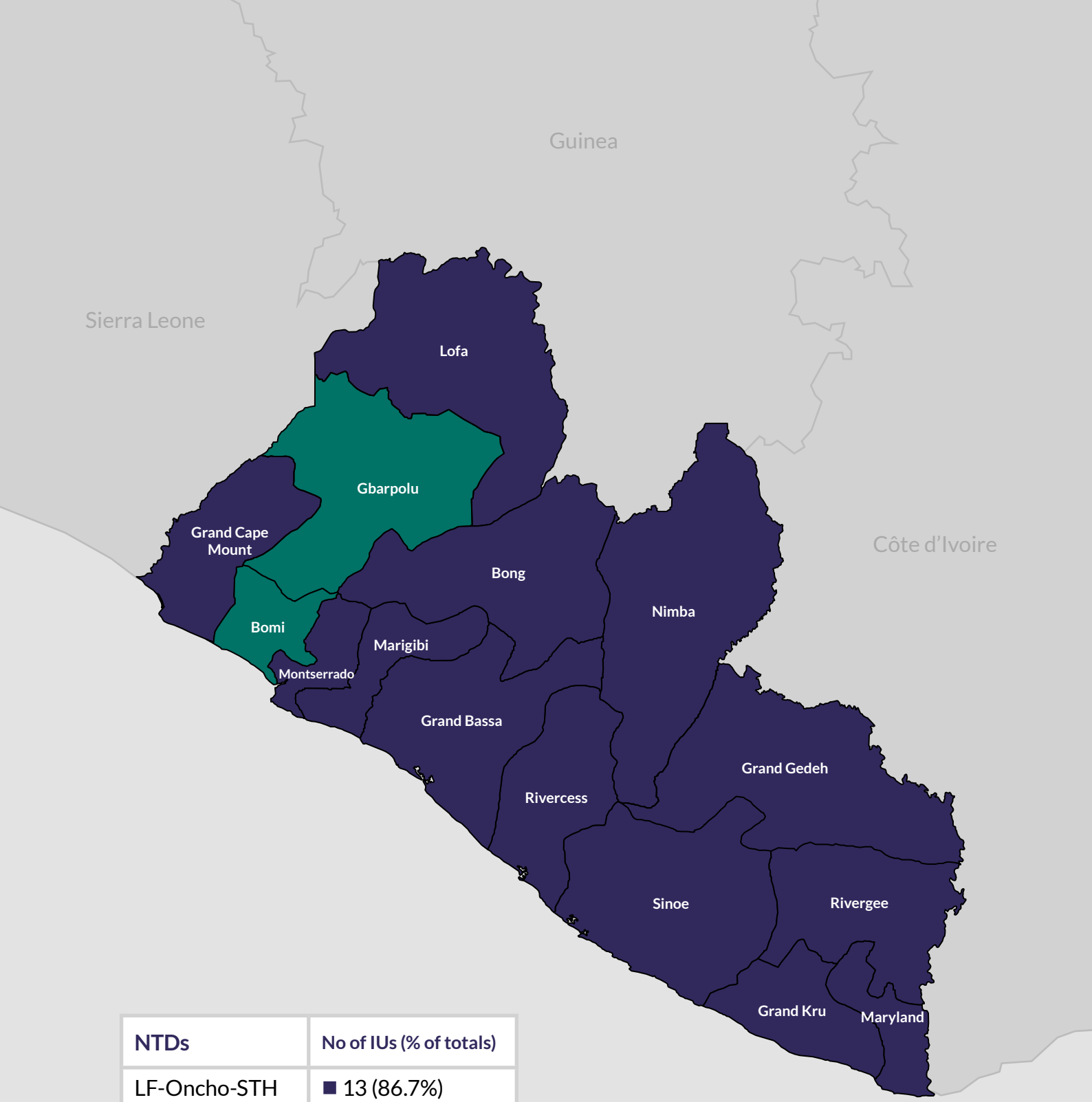
The MOH has 5 epidemiologists and one entomologist who could be trained in onchocerciasis surveillance. County Surveillance Officers send weekly surveillance reports to the MOH but this currently does not include onchocerciasis surveillance information. A national plan for control and elimination of NTDs has been finalized. Elimination of onchocerciasis is co-implemented with EPI, yellow fever and polio eradication. Onchocerciasis is co-endemic with LF in 13 of the 15 programme counties. There is no *Loa loa* co-endemicity.

Strengths and opportunities:

- Inclusion of NTDs in the National Health Plan
- Liberia Institute of Biomedical Research for research
- Collaboration and donor interest to support NTD programme.

Challenges and weaknesses:

- Motivation of CDDs
- Weak coordination and monitoring system
- Weak management information system
- Delays in reporting



NTDs	No of IUs (% of totals)
LF-Oncho-STH	13 (86.7%)
STH only	2 (13.3%)

Map 12: Endemicity of NTDs in Liberia

11. Malawi

The Malawi onchocerciasis programme has two projects: Thyolo Mwanza CDTI and the Extension CDTI projects implemented in all eight endemic districts. The programme targets a total population of 1,978,309 in 2,186 meso and hyper endemic communities. The programme which was established in 1997 is coordinated through the National Onchocerciasis Task Force (NOTF) and is comprised of the Ministry of Health (HQs and Districts), WHO, Tea Association of Malawi and Sightsavers (sole NGDO partner having taken over from the International Eye Foundation – IEF).

Mapping for onchocerciasis and LF has been completed (Map 13), LF was found to be co-endemic with onchocerciasis in eight districts. There is no *Loa loa* co-endemicity.

National scale up has been achieved on onchocerciasis. A total of 17,339 CDDs and 2,577 health workers supported 1,849,564 onchocerciasis treatments in 2015.
The programme has been performing very well. Over the period of implementation, the projects achieved an average GCR of 100% and TCR of 82.5%, onchocerciasis is expected to reach elimination by 2015.

The programme had a poor start but picked up in 2004 and has since been performing well. Entomological surveillance is currently being conducted in 15 sites for both projects.

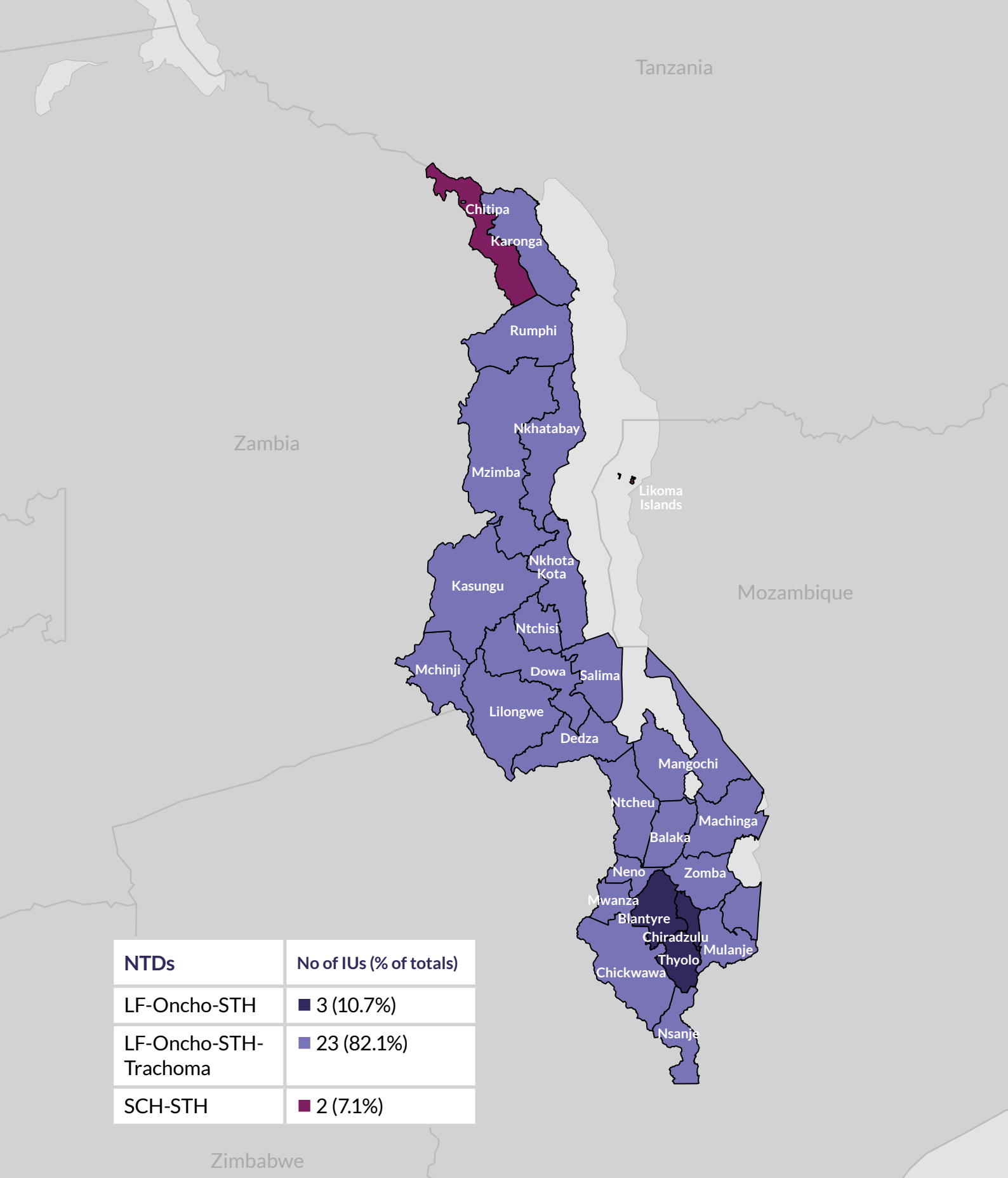
There is a national NTD programme in place.

Strengths and opportunities:

- Health assistants at community level
- Sector wide approach funds
- Integration of CDTI activities into the health system
- Co-funding from government for NTDs activities at central and district levels

Challenges and weaknesses:

- Employment of new HSAs who would require training
- Seasonal movement of people within and out of the districts
- Provision of monetary incentives to volunteers by other NGDOs
- Low CDD to population ratio



NTDs	No of IUs (% of totals)
LF-Oncho-STH	3 (10.7%)
LF-Oncho-STH-Trachoma	23 (82.1%)
SCH-STH	2 (7.1%)

Map 13: Endemicity of NTDs in Malawi

12. Mali

Mali which is an ex-OCP country, received support for onchocerciasis control from OCP from 1974 to 2002. Sightsavers supports elimination of onchocerciasis in the Sikasso and Koulikoro regions. The at risk population is 3,654,040 in 2,800 meso-endemic communities which constitute 33% of the 10,813,625 total population at risk in the country. National scale-up of the onchocerciasis elimination programme has been achieved. 2,863 CDDs and 352 health workers support the implementation of CDTI; the programme has achieved an average GCR of 100% and TCR of 80% over the period of its implementation.

There has been an integrated NTD plan since 2007 for the five PCT-NTDs. All the activities are integrated and both onchocerciasis and LF are at scale. Mapping has been completed for all NTDs except for SCH and STH (Map 14). LF is co-endemic in the project area and there is integrated mass drug administration. *Loa loa* is not endemic in the country.

A functional national committee for NTDs was constituted in 2007 and is composed of Coordinators of NTDs, INGOs and MoH (National Health Directorate). The national NTD programme is funded by USAID with HKI as the lead agency.

Sightsavers' support to LF targets a total population of 3,942,779 in 3,406 meso-endemic communities which constitute 26 % of the 15,000,000 total population at risk in the country. National scale-up of LF programme has been achieved. 3,406 CDDs and 262 health workers support the programme. An average geographical coverage of 100% and coverage rate of 81% was attained over the period of its implementation.

Strengths and opportunities:

- Integrated NTD programme
- Strong NGO partnership and support from WHO and WAHO.
- Innovative research

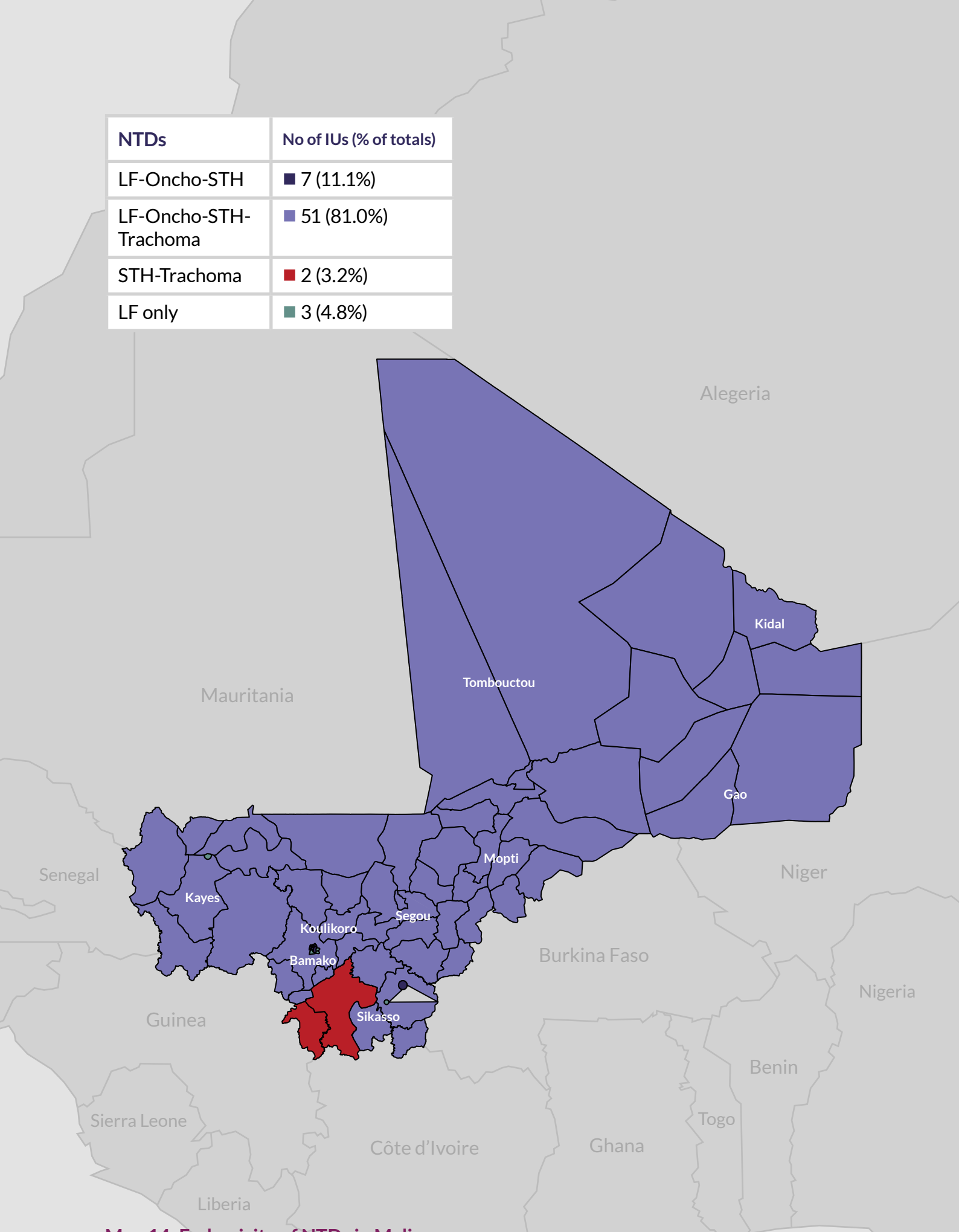
Challenges and weaknesses:

- High dependence on INGOs & USAID,
- Inadequate human resources for health impacting on monitoring and surveillance.

Epidemiological and entomological surveillance is conducted annually in sentinel villages. To date the community microfilarial prevalence has been at zero. The regional teams' capacity for epidemiological surveillance has been developed but capacity in entomological surveillance remains weak.

Treatment with ivermectin has been stopped in two districts (Yanfolila and Bougouni) and in 135 villages in the districts of Kita and Kenieba. The research study on interruption of transmission of onchocerciasis in Mali provided the proof of principle for the feasibility of elimination. The transmission assessment for LF has been carried out in the districts of Bougouni and Yanfolila. However the pre-TAS carried out in six districts of Koulikoro (Nara, Ouelessebougou, Dioila, Fana, Kangaba, and Koulikoro) indicates good progress towards interruption of transmission.

NTDs	No of IUs (% of totals)
LF-Oncho-STH	7 (11.1%)
LF-Oncho-STH-Trachoma	51 (81.0%)
STH-Trachoma	2 (3.2%)
LF only	3 (4.8%)



Map 14: Endemicity of NTDs in Mali

13. Niger

Niger was known to be among the countries in West Africa most affected by onchocerciasis – both in terms of public health and impact on agricultural productivity. Control through aerial spraying and ground larviciding was undertaken under the efforts of the Onchocerciasis Control Programme – which ran in West Africa from 1974 to 2002. In 2000, results from surveillance showed no infection and it was declared that onchocerciasis was no longer a public health problem in Niger.

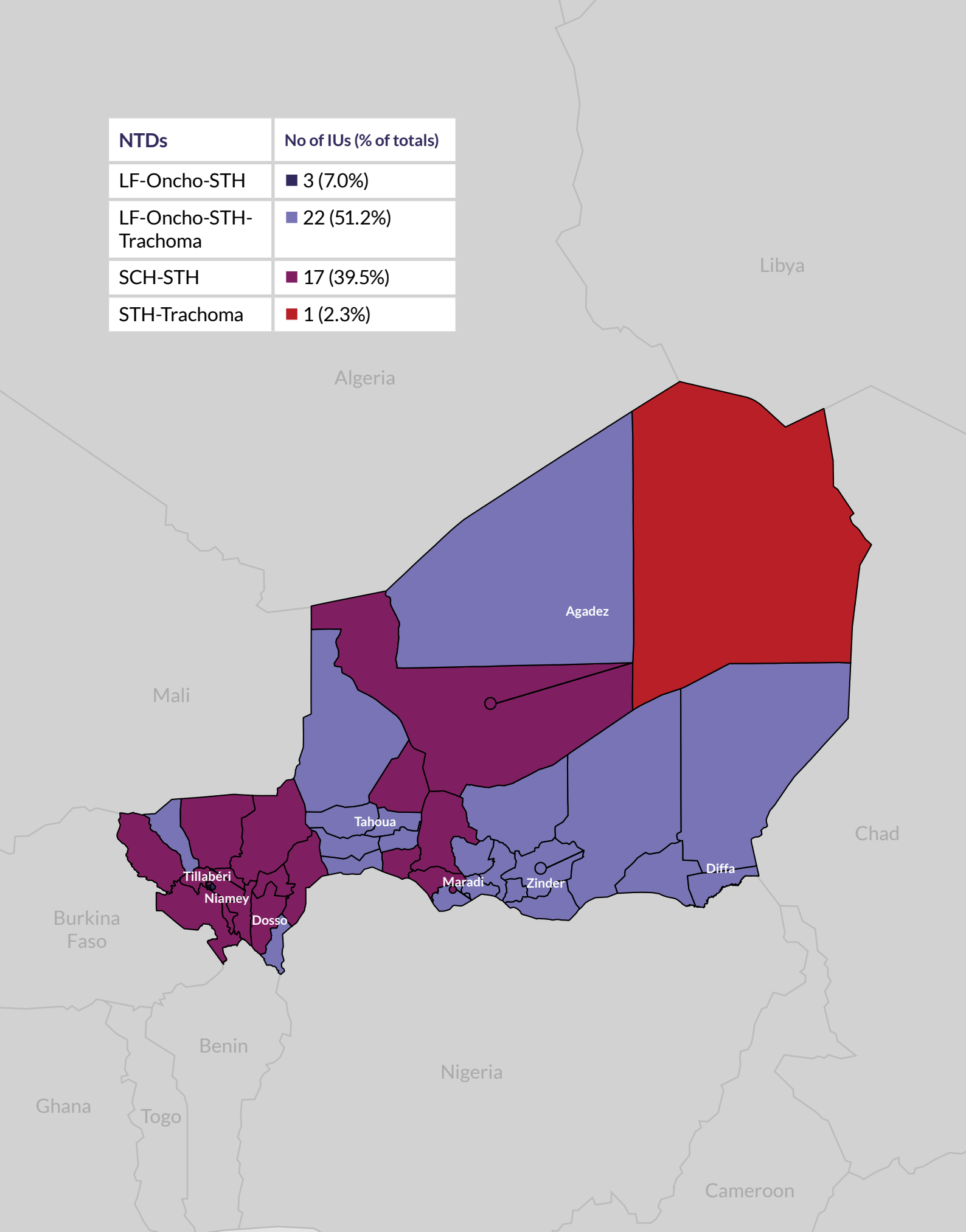
The focus is now on undertaking epidemiological and entomological evaluations required for the verification of elimination of onchocerciasis infection / interruption of transmission.

Sightsavers has been supporting the MOH of Niger since 2012. Results from the epidemiological and entomological activities supported by Sightsavers to date are promising, with all samples analysed in the period 2012-2014 being negative for onchocerciasis infection. However, for the verification of elimination it is necessary to ensure that the network of sites for surveillance is sufficiently representative of the epidemiological situation and that the surveillance extends for multiple years – following the end of any mass treatment with ivermectin.

CDTI has never been used for the control of onchocerciasis, though mass distribution of ivermectin together with albendazole has taken place for lymphatic filariasis in all five districts 'formerly' endemic for onchocerciasis. As such onchocerciasis surveillance to ascertain the interruption of transmission must be coordinated with the stopping of LF MDA. LF MDA has already been stopped in three of the five 'formerly' onchocerciasis-LF co-endemic districts. In the remaining two districts, one (Boboye) is scheduled for LF Treatment Assessment Survey (TAS) in 2014 and one (Gaya) is due for a TAS in 2015.

New tools / trapping methods are being used. In 2014 a novel trapping method was introduced to Niger and tested alongside human land capture. It is anticipated that the trap will continue to be used. The new Ov16 rapid diagnostic test which assesses exposure to infection was used in the country in 2015.

NTDs	No of IUs (% of totals)
LF-Oncho-STH	3 (7.0%)
LF-Oncho-STH-Trachoma	22 (51.2%)
SCH-STH	17 (39.5%)
STH-Trachoma	1 (2.3%)



Map 15: Endemicity of NTDs in Niger

14. Nigeria

Elimination of onchocerciasis is implemented within the FMOH/NTD structures. Besides Sightsavers, other active NGDO partners in the country include CBM, The Carter Centre, UNICEF, MITOSATH and HKI. 3 committees support implementation of the NTD programmes; the NTD steering committee, technical review committee and the NOTF/NTD-Task Force. These committees meet at different periods to review and provide technical support to the NTD projects.

In 2015 the National Onchocerciasis programme targeted treatment of 35,426,297 persons for onchocerciasis in 33,232 meso and hyper-endemic communities. Of this targeted population, Sightsavers supported the treatment of 6,646,342 which represents 19% of the national treatment. Sightsavers covered 6,752 (20%) of the endemic communities treated. Sightsavers supported the training of 5,510 health workers and 46,575 CDDs in six states. The National Onchocerciasis Elimination Committee was inaugurated in 2015 with the mandate of ensuring that transmission of the disease is interrupted by 2020.

Good progress has been made towards elimination of onchocerciasis in Kaduna, Sokoto, Zamfara, Kebbi and Kwara states. Epidemiological surveys of onchocerciasis in Kaduna State provided the first evidence of the feasibility of eliminating the disease after long term treatment (Afework *et al.*, 2012). Subsequent evaluations in Kebbi and Zamfara State did not find any positive case of onchocerciasis. Entomological surveys are yet to be completed in Kaduna State. However the delineation of onchocerciasis transmission zones is not completed in the country.

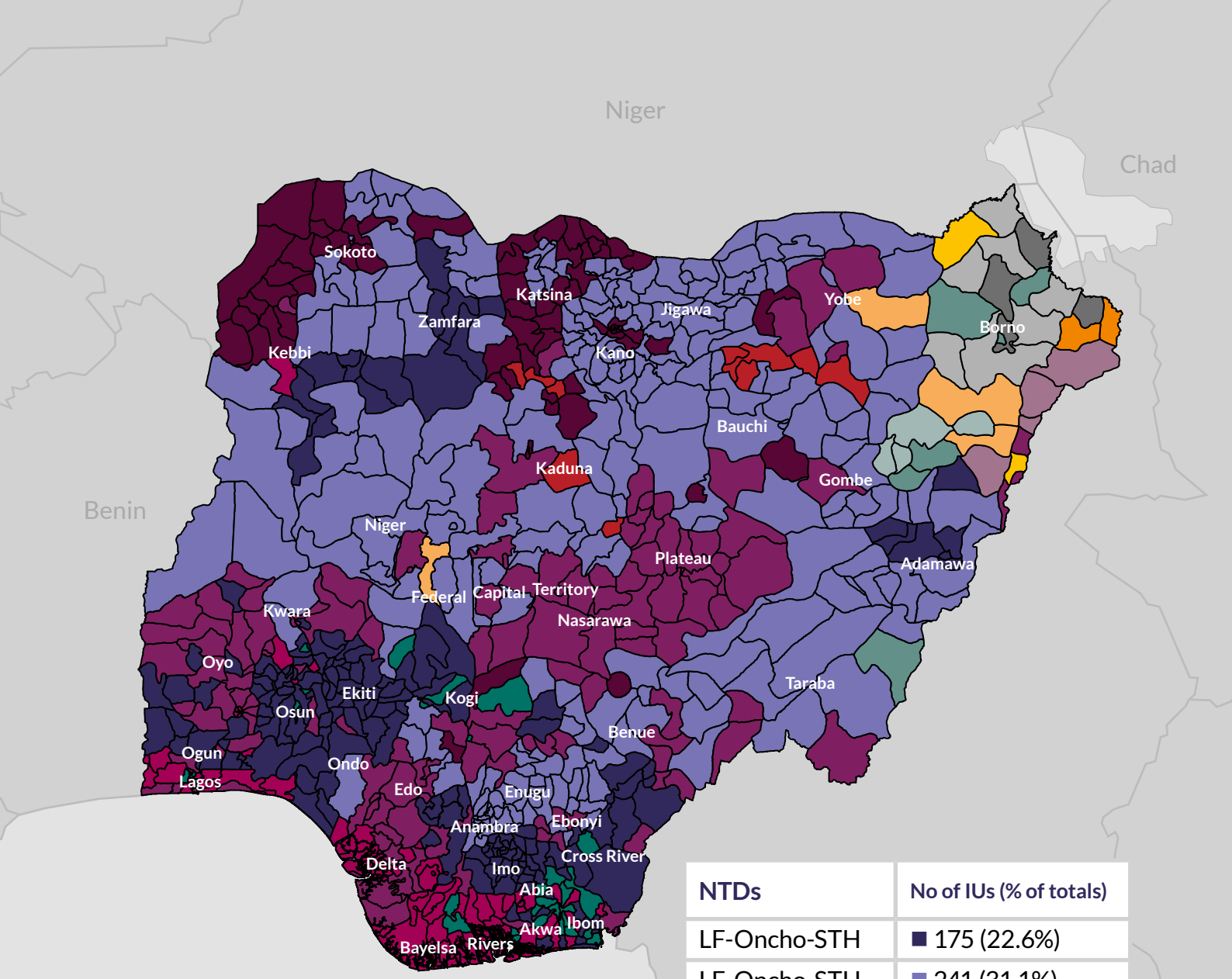
Besides pre-control REMO, epidemiological surveys were conducted in Kaduna and Zamfara states; all of which showed zero positive cases. Entomological surveys are planned to confirm elimination in these states. The country has a large pool of epidemiologists and entomologists who, if supported, would strengthen its onchocerciasis surveillance capacity. A national NTD strategy is in place but due to lack of dedicated donor funding for NTDs, the NTD programme has not expanded.

Sightsavers is however supporting integrated elimination of NTDs in Zamfara state and plans to expand to all its five supported states.

Mapping of LF is mostly complete in Nigeria (Map 16); apart from 13 LGAs in Borno State. Of the total 768 communities mapped by 2013, 42 have RAPLOA rates above 40%.

Nationally LF is endemic in 574 LGAs of which 223 have started implementing MDA. To achieve full scale up 351 LGAs need to start MDA. However, some LGAs have stopped MDA because there is evidence of elimination.

In 2015 83,283,834 persons were targeted for treatment for LF from 478 LGAs of 32 States in Nigeria. Sightsavers supported the treatment of 12,997,451 in 75 LGAs representing 16% of the national target.



NTDs	No of IUs (% of totals)
LF-Oncho-STH	175 (22.6%)
LF-Oncho-STH-Trachoma	241 (31.1%)
LF-STH	67 (8.7%)
LF-STH-Trachoma	77 (9.9%)
SCH-STH	137 (17.7%)
STH only	31 (4.0%)
STH -Trachoma	10 (1.3%)
LF only	9 (1.2%)
LF-Trachoma	2 (0.3%)
SCH only	2 (0.3%)
SCH -Trachoma	4 (0.5%)
Oncho only	4 (0.5%)
Oncho-Trachoma	4 (0.5%)
Trachoma only	4 (0.5%)
Non Endemic	7 (0.9%)

Map 16: Endemicity of NTDs in Nigeria

15. Sierra Leone

The onchocerciasis programme in Sierra Leone started in 1989. However, the ten year civil war (1993-2002) disrupted both ivermectin treatment and vector control activities. Activities resumed in 2003. Sightsavers supports the Southern and Eastern provinces serving a population of 1,498,310 in 8,451 meso and hyper-endemic communities. This represents 54% of the total at risk population of 2,775,158. HKI supports activities in the Northern province. The programme is fully integrated into PHC structures. At the national level, it is coordinated by the NTD control programme/ NTD Task Force while at the district levels, the NTD focal person works under the District Medical Officer. There is an NTD Task Force which meets half yearly; this Task Force is supported by APOC, Sightsavers and Helen Keller International. Mapping of all NTDs has been completed (Map 17), however delineation of transmission zones is required for onchocerciasis.

The NTD programme carries out MDA for four diseases – onchocerciasis, lymphatic filariasis, schistomiasis and soil transmitted helminthiasis. The onchocerciasis and schistosomiasis programmes cover 12 districts while lymphatic filariasis and soil transmitted helminths cover all 14 districts in the country. Treatment is at scale for these interventions but there are gaps in projects with NGDO support. The project targets a total population of 3,298,502 in 8,451 meso and hyper-endemic communities in the country. A total of 16,902 CDDs and 800 health workers supported the implementation of CDTI; the programme has achieved an average GCR of 100% and TCR of 80.9 % over the period of its implementation.

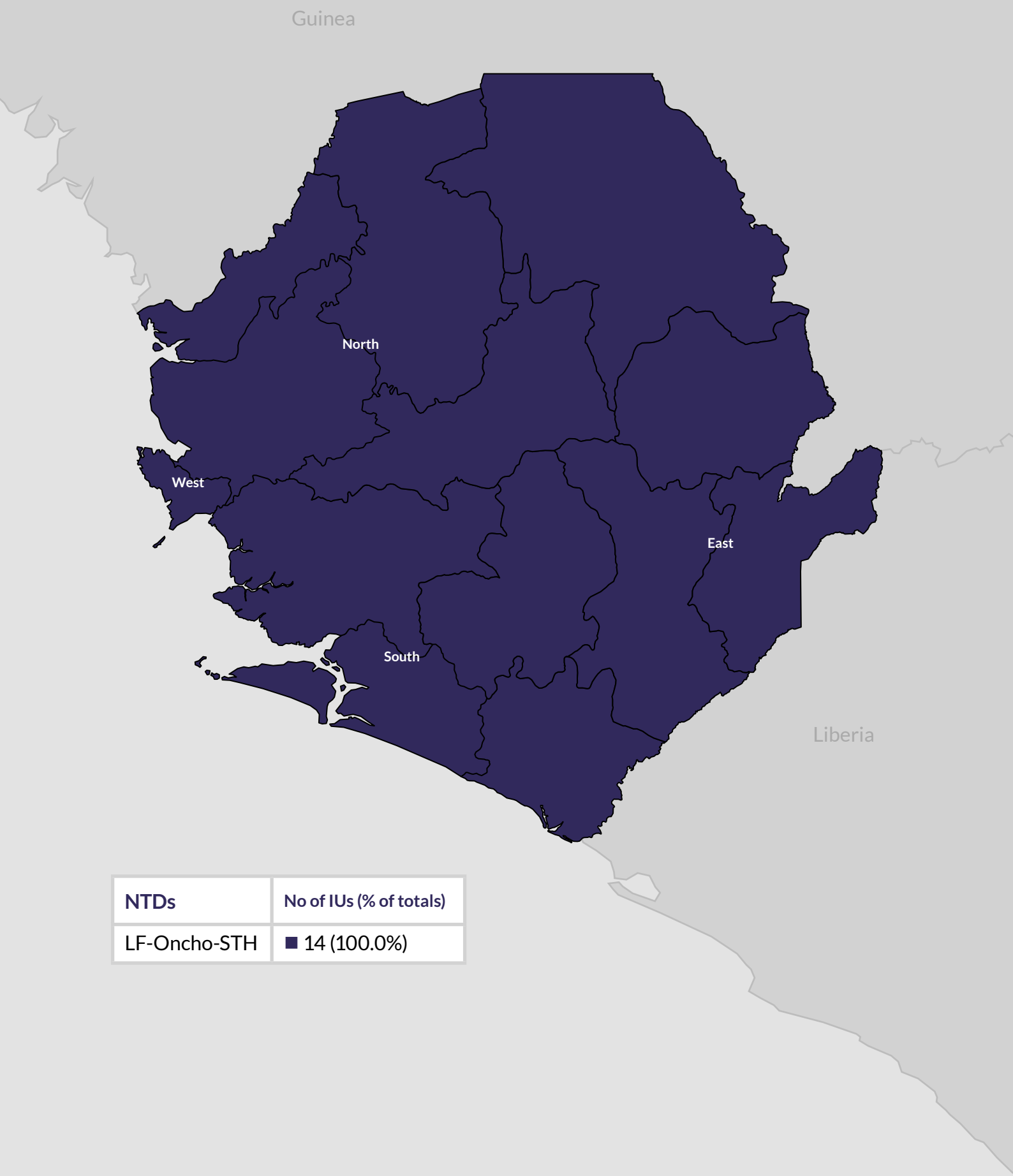
Strengths and opportunities:

- Integrated NTD progamme
- NTD funding from USAID/NTD grant
- Effective supervision from the national programme.
- Cross border meetings and synchronizing treatments
- Trained staff including the district health management team, primary health unit staff and CDDs

Challenges and weaknesses:

- Attrition of CDDs due to inadequate incentives.
- High donor dependence
- Late disbursement of funds causing late start of distribution resulting in late reporting.

For LF over the same period, the project targeted a total population of 6,820,160 in 16,701 endemic communities. National scale-up of the onchocerciasis programme has been achieved but there are gaps in projects with NGDO support. A total of 29,742 CDDs and 1,117 health workers support the implementation of CDTI; the programme has achieved an average GCR of 100% and TCR of 80.6% over the period of its implementation. Capacity has been built for surveillance, with two laboratory technicians and seven technicians available to the programme.



NTDs	No of IUs (% of totals)
LF-Oncho-STH	■ 14 (100.0%)

Map 17: Endemicity of NTDs in Sierra Leone

16. South Sudan

Community Directed Treatment with Ivermectin (CDTI) activities were initiated in South Sudan in 2004. In June 2011, APOC in collaboration with the Ministry of Health conducted sustainability evaluations of 3 out of 5 CDTI projects. The results of the evaluation revealed that none of the projects were moving towards sustainability. As part of the re-organization, the CDTI projects were increased from 5 to 10 projects – a project in each of the 10 states of South Sudan.

Sightsavers supports (since 2014) CDTI activities in one (Western Equatoria CDTI project) of the ten onchocerciasis endemic states in the country. The remaining nine states were supported by APOC and CBM. With the closure of APOC in 2015 the nine states now do not have a dedicated partner.

The MOH, with support from partners, has developed an NTD Master plan (2016-2020) and established an NTD Task Force. Sightsavers, WHO and other development partners are members of this Task Force which provides high level leadership & technical oversight for the management of the NTD; endorses the strategic & operational plans; takes lead in advocating for resource mobilization for NTD activities.

The project in Western Equatoria targeted a total population of 759,886; this constitutes about 12% of the total target population at risk in the country. In 2015, a total of 2,495 CDDs and 154 health workers supported the implementation of CDTI activities. The project achieved GCR of 80% and TCR of 60%.

As there is co-edemicity of onchocerciasis with Loa loa in at least 3 counties/districts in Western Equatoria project there could be likelihood of development of Serious Adverse Effects (SAE) when persons with high load of Loa loa infection are treated with Mectizan®. In March 2016 Sightsavers supported training on SAE to build the capacity of MOH staff on SAE management.

Strengths and opportunities:

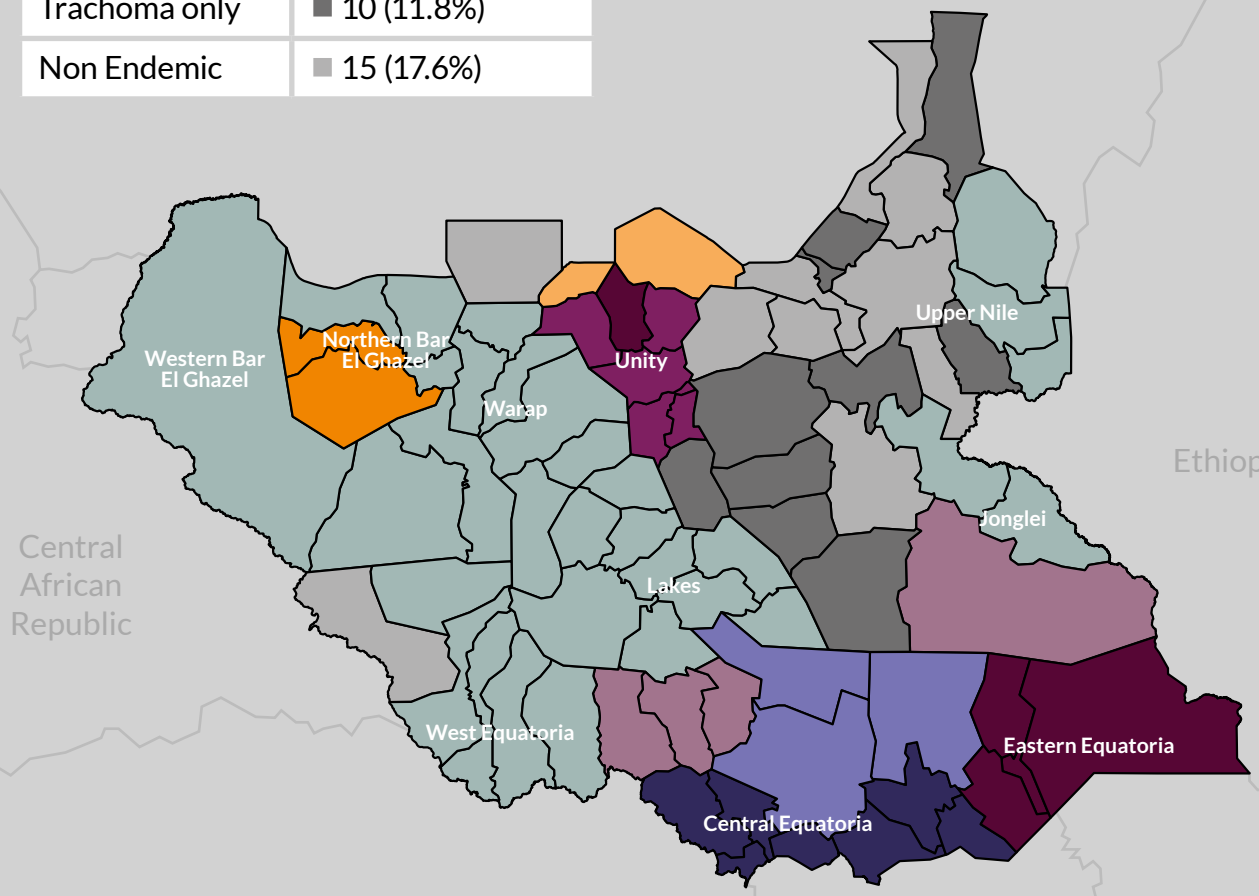
- Availability of NTD Master Plan, road map for onchocerciasis elimination and NTD Task Force.
- Integration of CDTI activities in PHC
- MOH with support from WHO started mapping of 3 PC NTDs.
- Availability of two international NGDO partners.

Challenges and weaknesses:

- Insecurity. This is caused by clashes in the project location between some militia groups and the government security forces.
- Inadequate Resources (Financial and Technical assistance). The closure of APOC in 2015 has reduced the overall technical and financial support for onchocerciasis activities in the country.
- Poor geographic and therapeutic coverage rates.The coverage rates have not reached the WHO recommended proportions.
- Partners with inadequate human resources .

Apart from onchocerciasis, the other PC-NTDs are not fully mapped. In February 2016 the MOH, with support from WHO, started the mapping of 3 PC NTDs (LF, STH and schistosomiasis) in 20 counties of South Sudan. Three of the 20 counties mapped were in Western Equatoria State. The results show that the three counties in WES were endemic for LF and schistosomiasis. Although the mapping is not completed, there is indication for future integrated control/ elimination of MDAs for onchocerciasis, LF and schistosomiasis in WES.

NTDs	No of IUs (% of totals)
LF-Oncho-STH	7 (8.2%)
LF-Oncho-STH-Trachoma	3 (3.5%)
LF-STH-Trachoma	5 (5.9%)
SCH-STH	5 (5.9%)
SCH only	2 (2.4%)
SCH-Trachoma	2 (2.4%)
Oncho only	32 (37.6%)
Oncho-Trachoma	4 (4.7%)
Trachoma only	10 (11.8%)
Non Endemic	15 (17.6%)



Map 18: Endemicity of NTDs in South Sudan

17. Tanzania

Tanzania is implementing a fully integrated NTD programme and mapping of NTDs is complete (Map 19). Sightsavers supports elimination of onchocerciasis in 12 of 17 endemic districts in four of five regions. There are gaps for NGDO partners in the Tanga and Mahenge CDTI district projects. The programme targets a population of 1,694,971 in 5,539 meso and hyper-endemic communities which constitutes 85% (of 1,997,459) of the burden of onchocerciasis in the country.

The NTD Task Force began functioning in 2014 and the NTD secretariat is functional at the regional, district and community levels. A total of 8,609 CDDs and 915 health workers support the implementation of CDTI. The programme supported 1,875,218 treatments and achieved on average 100% geographical and 84% therapeutic coverage for onchocerciasis in 2013 and 63% and 61% respectively for LF.

Vector elimination using ground larviciding was implemented in Tukuyu, and was a focus at the start of the programme. It was stopped after several years of implementation. APOC supported epidemiological surveys in Mahenge and Tanga projects in 2009 and 2010 respectively, the results showed a significant decrease in infection rates. Capacity for epidemiological and entomological surveillance is weak.

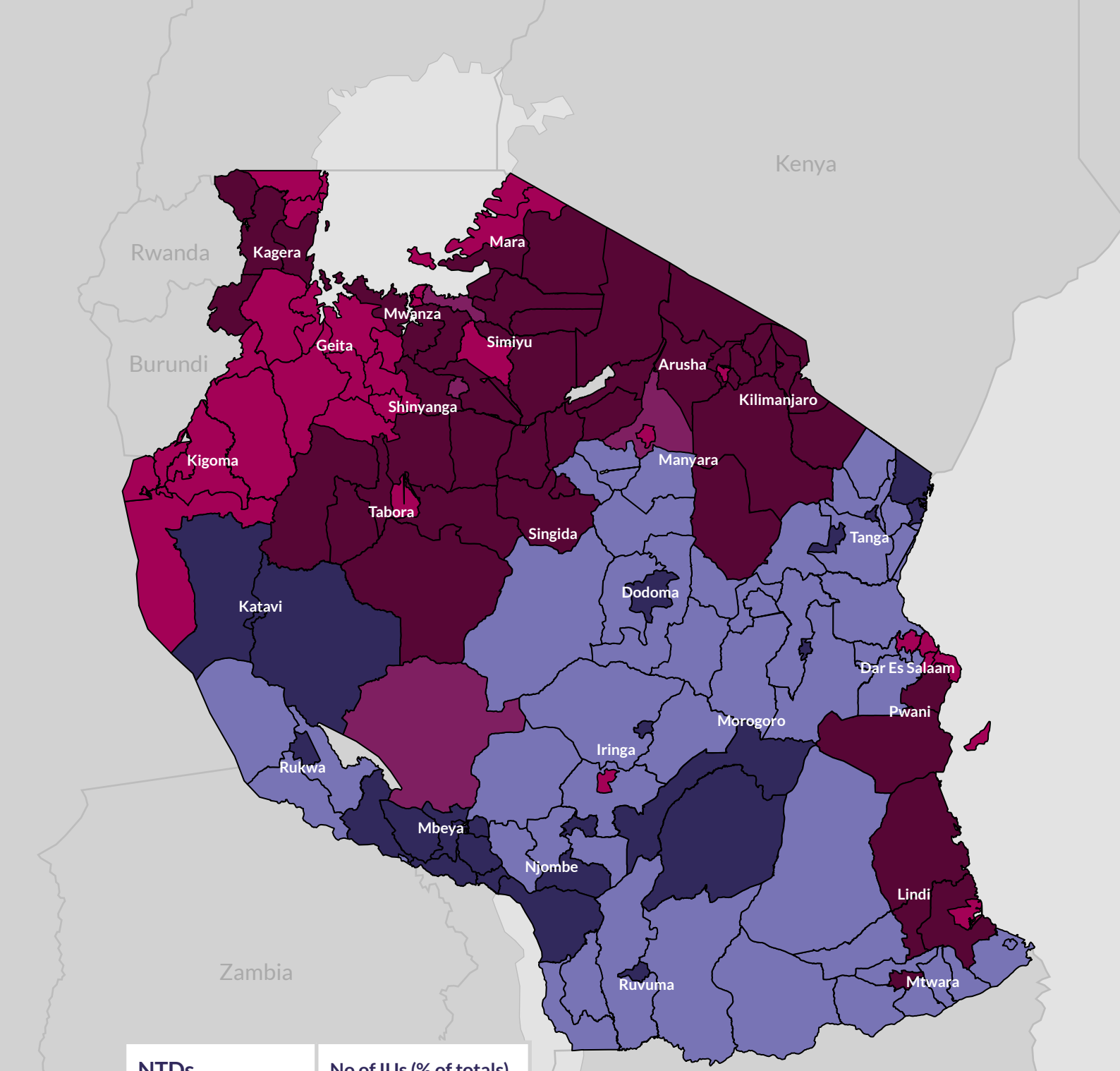
Six rounds of mass drug administration with ivermectin and albendazole have been carried out for lymphatic filariasis. MDA has been stopped in twenty one implementation units. The national elimination target is 2020, the 2012 GCR was 60% while the TCR was 69%.

Strengths and opportunities:

- The integrated NTD programme and the prioritization of NTDs in the Tanzania National Health Plan.
- Committed partners with possibility of increased funding
- Availability of frontline health workers and trained CDDs involved in MDA.

Challenges and weaknesses:

- Competing programme approaches to CDD incentives
- Completion of NTD mapping
- Inadequacy of the M&E and information system
- Inadequate incentives for community drug distributors
- No Disease Management and Disability Inclusion



NTDs	No of IUs (% of totals)
LF-Oncho-STH	25 (15.2%)
LF-Oncho-STH-Trachoma	47 (28.7%)
LF-STH	41 (25.0%)
LF-STH-Trachoma	47 (28.7%)
SCH-STH	4 (2.4%)

Map 19: Endemicity of NTDs in Tanzania

18. Togo

The NOCP implements onchocerciasis elimination in 32 of 40 endemic districts. It targets a population of 4,859,037 of which 3,985,968 treatments were conducted in 2015. The programme achieved a GCR of 99% and TCR of 83%.

The Onchocerciasis Elimination Expert Advisory Committee was inaugurated and held its first meeting in 2016. There are also coordination mechanisms at the regional and district levels. CDTI focal persons exist at each regional and district level. Full scale up of the programme has been achieved. 11,036 CDDs, 69 health workers and 16 regional entomology technicians support the programme. Semi-annual treatment is provided in hot spots to fast track elimination of the disease.

A national NTD programme was started in 2010 and is implemented in 3 of the 5 regions. LF was co-endemic in 7 districts but has since been eliminated and is now in the surveillance stage. *Loa loa* is not endemic in the country.

Epidemiological and entomological surveillance are conducted in sentinel villages both of which, by 2010, still showed parasite infectivity rates and fly infection rates below the threshold for elimination. The country has adequate capacity for epidemiological and entomological surveys.

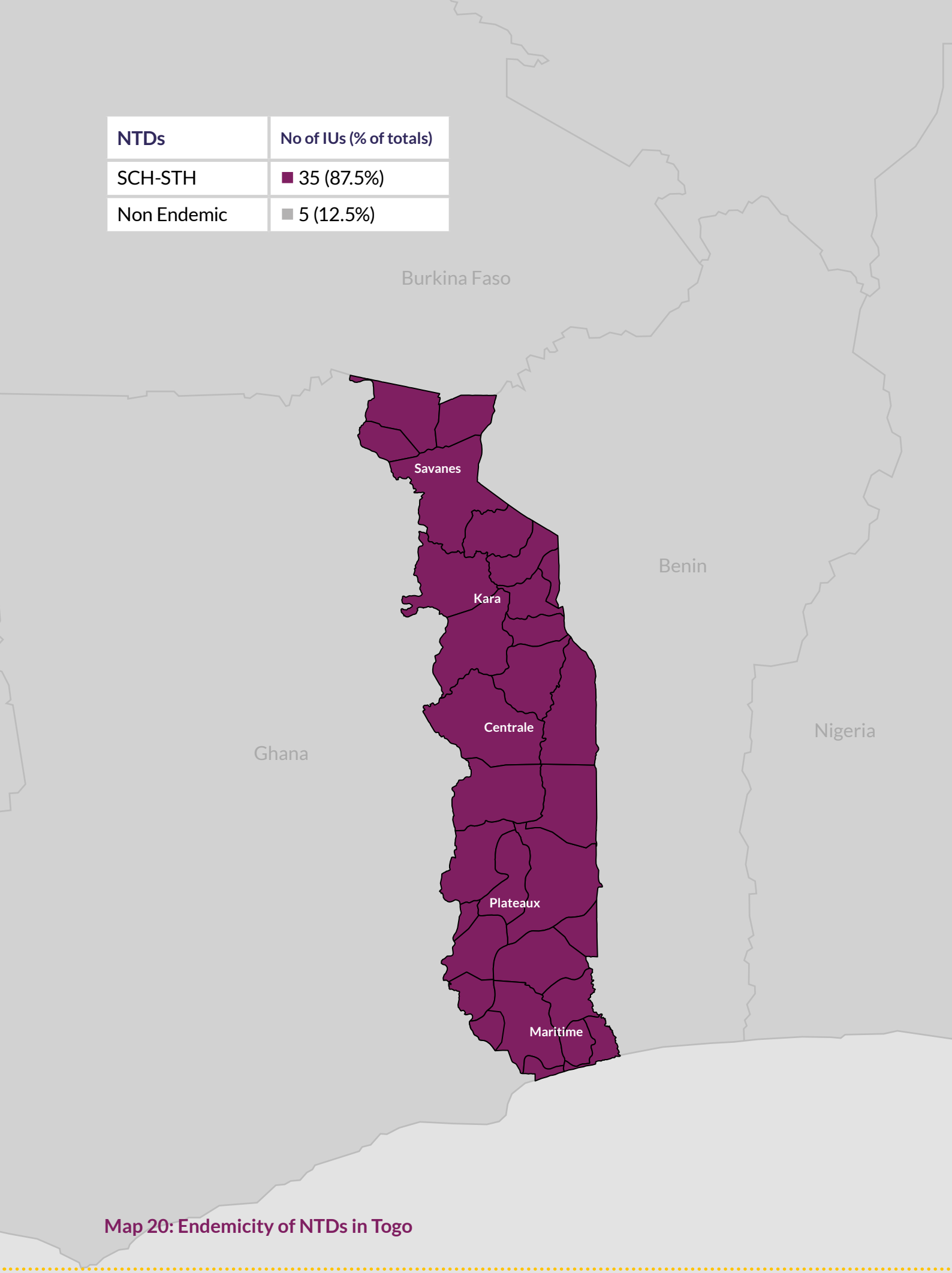
Strengths and opportunities:

- Experienced onchocerciasis team
- Integrated NTD programme
- Integration of CDTI into the health system.

Challenges and weaknesses:

- Conflicting approaches of the NTD programme with the CDTI approach
- Limited government financial contribution
- Inadequate technology for technicians for transmission assessment surveys
- Few NGDO partners

NTDs	No of IUs (% of totals)
SCH-STH	35 (87.5%)
Non Endemic	5 (12.5%)



Map 20: Endemicity of NTDs in Togo

19. Uganda

Sightsavers supports onchocerciasis elimination in 4 districts of the Bunyoro region of western Uganda ie Hoima, Masindi, Buliisa and Kibaale and 3 districts of the Acholi region of northern Uganda ie Kitgum, Pader and Lamwo. In 2016, LF MMDI will be initiated in 16 districts where LF and onchocerciasis are co-endemic.

The CDTI/MDA interventions target a total population of 373,877 in 553 meso and hyper-endemic communities; these constitute 14% of the total at risk population in the country. As by 2015, 2,852 CDDs and 161 health workers were supporting the implementation of CDTI and over the 20 years of programme implementation, the average GCR and TCR of 100% and 80% respectively was achieved. Besides, Vector control by ground larviciding using Abate insecticide is being implemented in three districts of Acholi region. National scale-up of the onchocerciasis programme has been achieved with the support of three NGDOs ie Sightsavers, The Carter Centre and RTI.

A national NTD control/elimination programme has been established. All five PCT NTDs have been mapped (Map 21) and are well integrated into the NTD programme. The Government of Uganda in 2007, with the support of The Carter Centre, started implementing an onchocerciasis elimination strategy which supports semi-annual ivermectin treatment and vector control. The UNOETF oversees the implementation of this elimination strategy.

The implementation of the programme is coordinated through the National Onchocerciasis Task Force (NOFT), the NTD Technical Review Committee, the Uganda National Onchocerciasis Elimination Expert Advisory Committee (UNOEEAC) and the NTDs secretariat committee; comprised of NTD programme managers and development partners who are responsible for implementation.

Strengths and opportunities:

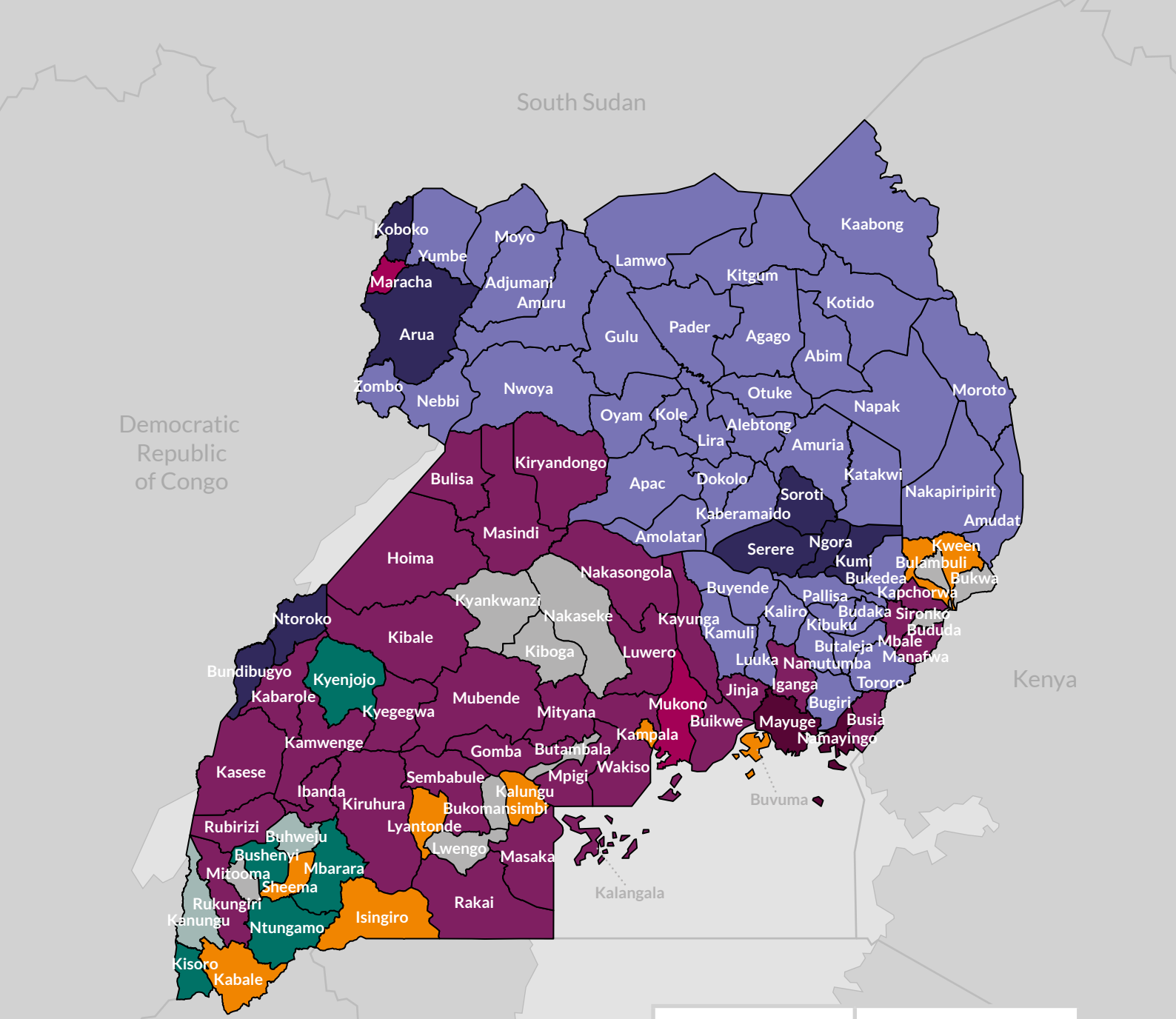
- Integrated NTD programme
- Integration into PHC
- Semi-annual treatment to fast track elimination
- Capacity to undertake entomological surveillance

Challenges and weaknesses:

- Risk of cross-border transmission along South Sudan and DRC borders.
- Inconsistent treatment in mid-north due to prolonged period of civil strife which may delay national verification of elimination.

The project targets a total population of 373,877 in 553 meso and hyper-endemic communities which constitute 14% of the 2,720,611 total population at risk in the country. National scale-up of the onchocerciasis programme has been achieved but there are gaps in projects with NGDO support. By 2015, out of the 7 supported districts; two of the four MDA districts had achieved interruption of transmission and had transitioned to PTS while transmission was still ongoing in the other two. Marked reduction of the number of flies and crab infectivity rates had been achieved in the districts where vector control interventions are being implemented.

Entomological surveillance is ongoing in the project area and adequate capacity has been developed. Elimination has been achieved in one focus and interruption of transmission has been achieved in eight of the eighteen transmission foci (2 of these are supported by Sightsavers).



NTDs	No of IUs (% of totals)
LF-Oncho-STH	9 (8.0%)
LF-Oncho-STH-Trachoma	41 (36.6%)
LF-STH	1 (0.9%)
LF-STH-Trachoma	2 (1.8%)
SCH-STH	33 (29.5%)
STH only	5 (4.5%)
SCH only	9 (8.0%)
Oncho only	2 (1.8%)
Non Endemic	10 (8.9%)

Map 21: Endemicity of NTDs in Uganda

Appendix 5: Sightsavers policy on support to elimination of onchocerciasis and lymphatic filariasis

1. Background to policy

Sightsavers started supporting control of onchocerciasis (river blindness) in the early 1990s and in 2011 it extended its support to lymphatic filariasis. The first policy on onchocerciasis was written in 1994. Since then, there have been several developments notable among which is the evidence on interruption of transmission that informed the shift from control of onchocerciasis to elimination, expansion of Sightsavers activities beyond blinding diseases to include Neglected Tropical Diseases (NTDs), development of the World Health Organisation's NTDs road map, The London Declaration, development of new approaches/tools/devices and our own ten year strategic plan to eliminate onchocerciasis.

WHO's definition of elimination of onchocerciasis and lymphatic filariasis

Onchocerciasis

Elimination is the reduction to zero of the incidence of infection caused by a specific pathogen in a defined geographical area, as a result of deliberate efforts; continued actions to prevent re-establishment of transmission may be required. When elimination of the parasite is confirmed, the endemic area moves into the 'post-endemic' phase.

Lymphatic filariasis

A state of bringing the microfilariae rate to below one per cent in blood samples examined. In such a low microfilaraemic state, LF ceases to be a public health problem due to gradual decline of transmission.

Our ten year strategic plan has been revised to include lymphatic filariasis, the Strategic Implementation (SIM) Card objectives and NTDs indicators. Quality Standard Assessment Tools have been developed by Sightsavers which link in with this policy and provide the framework for the elimination of onchocerciasis and lymphatic filariasis.

This revised policy provides the core principles, within which Sightsavers will plan, implement, review and evaluate its support to the elimination of onchocerciasis and lymphatic filariasis.

The policy will guide Sightsavers' programme teams, fundraising teams and communication teams as well as inform our partners and donors on our policy on elimination of onchocerciasis and lymphatic filariasis.

This policy is to be used in conjunction with Quality Standards Assurance Tools, the Strategic Implementation Card and WHO Guidelines on Verification of Elimination of Human Onchocerciasis and LF.

2. Core principles and explanations

Core principle 1

Sightsavers believe that elimination of onchocerciasis and elimination of lymphatic filariasis in Africa and Yemen is achievable. Sightsavers shall maintain our support to elimination of onchocerciasis and lymphatic filariasis in Africa and Yemen until our goal is attained.

Explanation of core principle 1

Sightsavers in 2009 expanded scope of activities beyond blinding diseases. In 2010, the Board of Trustees and Strategic Management Team (SMT) approved an approach for fast tracking onchocerciasis as one intervention that would enable Sightsavers to have long lasting impact and a historic legacy given the principle of eliminating transmission of the disease had been confirmed.

The shift from control of onchocerciasis to elimination was informed by the research on the "Feasibility of Elimination of Onchocerciasis with ivermectin Treatment in Endemic Foci in Africa[1]: First Evidence from Studies in Mali, Senegal and Nigeria[2] and WHO's wide consultation with onchocerciasis experts in 2009 and 2014 to review the status of onchocerciasis elimination in Africa using current tools, and to identify critical issues to the feasibility of elimination and the reviewed elimination guidelines respectively. The meetings provided a definition of elimination, and the use of O-150 PCR (PoolScreen) testing in black flies and Ov-16 serology in children to demonstrate interruption of transmission of Onchocerca volvulus for the purpose of stopping MDA.

The WHO 2016 elimination guidelines specify that countries should set up independent onchocerciasis elimination expert advisory committees. Uganda led the process in 2007 and was followed by Nigeria, Tanzania, Burkina Faso, Togo, Malawi and Sierra Leone. Liberia, Guinea Bissau, Guinea, Benin, Cameroon, Niger and Cote d'Ivoire have identified members of their respective committees.

A smartphone device to detect and quantify infection has been developed. Sightsavers will combine the use of this device to scale treatments and impact assessments. Sightsavers will support the use of these tools in transmission and impact assessment surveys in all countries.

To achieve interruption of transmission of onchocerciasis, at least 80% treatment coverage and 100% geographic coverage of a community is required[3] while for lymphatic filariasis at least 65% treatment coverage and 100% geographic coverage in each community and effective vector control are required.

Data from Onchocerciasis Elimination Programme of the Americas (OEPA), Sudan and Uganda[4] show successful interruption of transmission from bi-annual treatment. In some areas in Uganda, vector control activities in addition to bi-annual treatment have further reduced the period of intervention required to attain elimination to less than six years.

Sightsavers' experience in over 20 years is that the arrival of Mectizan® tablets in a village is often one of the first accessible and effective medicines the community has experienced and is warmly welcomed by them. Not only do Mectizan® tablets prevent generations from going blind, they also rid the individual of the intolerable itching, dislodge head lice, scabies and intestinal parasites such as Ascaris, and are seen as restoring libido in men. Distribution of the medicine is a fairly uncomplicated activity with immediate health benefits to the community and has proved an excellent entry point for other components of eye health, education and social inclusion services. Many treatments are provided in communities over 20 km from the nearest health centre thereby providing access to health for communities who have no access to national health services.

Core principle 2

Sightsavers shall prioritise all endemic areas where we work

Explanation of core principle 2

The onchocerciasis expert group meeting of 2009 introduced the concept of transmission zones which were defined as "a geographical area where breeding of O. volvulus occurs by locally breeding vectors and which can be regarded as a natural ecological and epidemiological unit for transmission". Operationally, a transmission zone is a river basin where onchocerciasis is endemic, with communities (hyper endemic) with the highest prevalence of infection located close to the river and prevalence levels falling with increasing distance from the rivers. A transmission zone can be "open" or "closed" depending on whether there is migration of flies or humans from neighbouring areas. To eliminate onchocerciasis from open transmission zones, interventions should also be carried out in the source area of infection. The final decision on when to stop treatment will take into account the risk of reintroduction of the parasite through human or vector migration. This will entail studies on vector and human migration into the transmission zones.

Delineation of transmission zones is a challenging area that requires expert advice/ input; it may require alignment to government administrative divisions.

Sightsavers will support delineation of transmission zones for onchocerciasis and selection of sentinel sites and spot check sites for lymphatic filariasis as defined by WHO respectively. Sightsavers shall support studies on human and vector migration in supported projects. Human migration from onchocerciasis endemic areas however has to be large to have an effect on onchocerciasis transmission.

Core principle 3

Sightsavers shall promote best practices on equitable access to MDAs, management of SAEs, vector control and transmission assessment as defined by WHO Guidelines on elimination of onchocerciasis and lymphatic filariasis and our Quality Standard Assurance Tools. We shall support approaches which aim to empower communities affected by the disease to plan, and manage their own treatment activities to attain and sustain high treatment coverage to stop interventions, commence post intervention surveillance and achieve elimination.

Explanation of core principle 3

- Guidelines for use of Mectizan® tablets in Loa loa endemic areas are available for guidance on Severe Adverse Events (SAEs)[5]. We shall work with our international partners and the governments and communities of the affected countries to ensure everyone in programme areas we support receives Mectizan® tablets for onchocerciasis and ivermectin and albendazole annually or albendazole only bi-annually (as determined by the strategy for the transmission zone) and that those who need care and surgery receive it.

- We shall ensure, where appropriate, vector control allied to malaria bednet distribution is included in our LF elimination strategy in particular as a priority in Loa loa co-endemic areas. We shall seek to advocate for this policy at national level following the lead from Nigeria which pioneered this policy message of greater integration of malaria and LF activities. The engagement and participation of community leaders and communities affected by onchocerciasis and lymphatic filariasis in planning, community self-monitoring, stakeholders meetings and management of their own treatment activities facilitates attainment and sustains the high coverages needed to achieve elimination within transmission zones.

Strategy for mass administration:

CDTI aims to empower communities in decision making over managing their treatment regime. It enables them to make informed decisions on the following:

- the most convenient time of year (normally in the dry season when there is less agricultural work and access to communities is easier);
- whether drug distribution is best done house-to-house or at a central point;
- select the most suitable community members to train as CDDs to undertake distribution and awareness creation.

Lymphatic filariasis programmes promote the use of mass drug administration which uses CDDs and national census data rather than enumeration of the population by the CDD.

Sightsavers will promote the use of CDDs to create awareness on disease management and disability inclusion (DMDI) referring individuals with elephantiasis and hydrocele to heath facilities and care givers, working to create an uptake of surgeries and encouraging the adoption of limb hygiene and management and access to surgery for hydrocele patients.

- Sightsavers will also promote and support Community Directed Intervention in a health systems approach. This may include meeting the costs of advocacy, sensitisation, health education and mobilisation using community structures, effectiveness and use of Mectizan® tablets, and tools on accounting for and reporting on the use of the medicine. Sightsavers will also fund the procurement of vehicles and motorcycles for health workers to strengthen supervision of CDTI activities and medicines for management of side-effects which may be experienced in the first rounds of treatment. Such side-effects are normally minor except in Cameroon and Democratic Republic of Congo, where onchocerciasis is co-endemic with the Loa loa parasite. Serious Adverse Events (SAE) are more common in individuals heavily infected with L. loa during the early rounds of treatment, and have on very rare occasions led to death. In these areas Sightsavers will ensure that the Mectizan® Expert Committee/APOC/TCC treatment guidelines, which require enhanced supervision of treatment by qualified health personnel, are strictly adhered to.
- Sightsavers will also support the use of new tools for reporting and other tools eg smartphone devices to detect infection and quantify medicines as they are approved by WHO.
- Sightsavers shall support annual independent coverage surveys to ascertain the quality of mass drug administration for both diseases and ensure maximum impact as stated in the Quality Standards Assessment Tools.

Transmission assessment:

Sightsavers has adopted the conceptual framework of defining transmission zones, using high coverages, using O-150 PCR (PoolScreen) testing in black flies and Ov-16 serology in children (including skin snip PCR only in children positive for serology) to demonstrate the interruption of transmission of Onchocerca volvulus in a human population receiving mass drug administration (MDA) against onchocerciasis, for the purpose of stopping MDA and progression to post treatment surveillance for 3-5 years and verification for elimination. In doing so, we shall support delineation of transmission zones for each project as stipulated in the guidelines for elimination[6]. Sightsavers shall work with modellers and provide treatment, entomological and serological data to determine alternative treatment options to fast track elimination.

For lymphatic filariasis we adopt the concept of evaluation units and the method of 'transmission assessment survey' and vector control particularly in areas co-endemic with Loa loa for assessing whether a series of rounds of mass drug administration had successfully reduced the prevalence of infection to levels equal to or below critical cut-off thresholds for the various vector species. We are also using the Ov-16 serology test in children for the purpose of stopping MDA and progressing to post treatment surveillance. We shall evaluate the efficacy of vector control methods given the extent of insecticide resistance; in many areas of Africa Anopheles populations are highly resistant to pyrethroid insecticides. We will plan to incorporate the most up to date new products when available for vector control[7].

The standard post treatment surveillance period is 3 years but there may be need to extend this to 5 years to allow for other areas in a region or country to achieve interruption of transmission. Vector control will be continued in areas co-endemic with Loa loa for lymphatic filariasis.

- Verification and Validation of Elimination: Sightsavers will support countries to document and prepare their dossiers for verification of elimination of onchocerciasis and validation of elimination of LF in line with the WHO Guidelines on Elimination of both diseases.
- The governments of most countries affected by onchocerciasis and lymphatic filariasis have set up National Neglected Tropical Diseases Task Forces (NTDTF) / National NTDs Steering Committees and/or are in the process of setting up Onchocerciasis Elimination Expert Advisory Committees. The membership consists of the Ministry of Health, representatives of the NGDOs and national and international experts who meet to plan, review and advise on the implementation of elimination activities and deal with any issues arising.. Sightsavers will actively promote collaboration with the Ministry of Health, donors and other NGDOs to avoid duplication of efforts, and ensure maximum therapeutic and geographic annual coverages to attain the ultimate treatment goals.

Core principle 4

The currently approved elimination mechanism for onchocerciasis is by treatment with the medicine Mectizan® (ivermectin), which is donated free of charge by Merck and Co. Inc., and is recognised as a safe and effective treatment for the disease except in Loa loa endemic areas where there is a risk of serious adverse events due to Loa loa .

The current strategy for the elimination of lymphatic filariasis is mass distribution of ivermectin and albendazole (or albendazole biannually in Loa loa endemic areas) as well as DMDI and integrated vector control through the use of insecticide impregnated nets (ITNs or LLINs) to control Anopheles transmitting mosquitoes to reduce transmission. Albendazole is donated free of charge by GlaxoSmithKline.

Explanation of core principle 4

Mectizan® is still the principal intervention for elimination of onchocerciasis. Sightsavers will continue to use Mectizan® tablets as such for elimination of onchocerciasis until a new medicine is approved by WHO. Several studies have shown that the duration of treatment can be reduced by increasing the frequency of treatment[8] and by localised vector control[9]. Sightsavers will work with modellers and adopt a responsive and flexible approach to frequency of treatment and localised vector control to fast track interruption of transmission.

Treatment with ivermectin and albendazole, disease management and disability inclusion are still the strategy for elimination of LF. Where Loa loa is co endemic, albendazole only will be distributed biannually.

Core principle 5

Sightsavers shall promote a health system strengthening approach to attain the elimination of onchocerciasis and lymphatic filariasis within the WHO framework set out in the six building blocks.

Sightsavers shall provide technical assistance to the governments of the affected countries, and in areas where the health systems are weak Sightsavers shall partner with NGDOs and community-based groups with expertise to support them to participate in the elimination of the diseases.

Explanation of core principle 5

Strong health systems are critical to maximising the impact of the current investments for NTDs and the lack of robust, effective and well-resourced health systems in countries endemic for NTDs threatens to compromise the effectiveness of the interventions. Sightsavers will promote the integration of onchocerciasis interventions and other NTD programmes with the national health systems. Sightsavers shall either use available USAID or other assessment reports or support assessments to inform how we address the gaps. Due attention will be paid to governance and leadership, financing and supply chain management.

To achieve the required scale up for elimination a systems approach to strengthening the health system is set out in the building blocks. These building blocks provide the framework to address the challenges of scaling up, sustaining coverages until treatment is stopped, initiating post treatment surveillance and identifying gaps and strengthening each building blocks as follows:

Governance and leadership	• Coordinated partnership and effective committees • Integrated delivery of NTDs and post treatment survellience within health system alongside other public health activities • Attainment and sustenance of high geographic and treatment coverages • Cascaded monitoring and supervision and post intervention surveillance
Human resource	• Sufficient numbers of skilled, well trained and motivated health workers (particularly the frontline) and CDDs supported to deliver treatments as determined by approach for transmission zone.
Medicines, supplies, infrastrucure and technology	• Responsive procurement systems that respond to changes in strategy ie from annual treatment to bi-annual treatment or localised vector control • Strengthening supply chain management • Timely procurement and supply of infrastructure and technology for TAS/evaluations
Financing	• All levels of government honour and ensure timely financial commitments in MOUs • Timely and innovative resource mobilisation strategies to fund scale up and elimination
Health information	• Data integrated into national HMIS, strengthening of data collection, analysis and use for planning. • Capacity building of data collectors
Service delivery	• Timely and equitable access to Mectizan®, Albendazole, ITNs and MMDP • Attaining and sustaining high treatment coverages in an equitable way-reaching all under served and marginalized populations. • Scaling up treatment and ensuring attainment of ultimate treatment goal (UTG)

Core principle 6

Sightsavers shall promote an integrated NTDs approach to achieve and sustain elimination of PCT NTDs namely onchocerciasis, lymphatic filariasis, soil transmitted helminths, schistomiasis and trachoma.

Explanation of core principle 6

An integrated approach to elimination of onchocerciasis and NTDs is value for money as it will enable programmes to achieve synergies, solve operational challenges and increase efficiency. The overlap of geographical areas of endemicity of the five targeted PCT NTD diseases ie trachoma, onchocerciasis, schistosomiasis, lymphatic filariasis and soil transmitted helminths makes it possible for integrating elimination of NTDs. This approach is in line with the WHO/AFRO NTDs strategy. Operational integration of disease specific elimination activities will be carried out where feasible and should where necessary include: integrating MDAs using the Community Directed Intervention strategy and Health Education, Sensitisation, Advocacy and Mobilisation (HSAM) activities. Other operational aspects that have to be integrated are WASH for behaviour change activities and materials, morbidity management and disability prevention, hydrocele services, use of Long Lasting Insecticide treated Nets, advocacy activities and materials, integrated census and mapping, monitoring and reporting tools.

Core principle 7

Sightsavers shall work with the governments, communities and partners in the WASH sector and medical services and malaria programmes to adapt robust, responsive and flexible strategies to fast track elimination of onchocerciasis and lymphatic filariasis and build sustainable long term integrated surveillance systems with minimum external support.

Explanation of core principle 7

Sightsavers recognises that collaboration is vital to the elimination of onchocerciasis and lymphatic filariasis in Africa and Yemen. We shall advocate for additional support to onchocerciasis and lymphatic filariasis programmes and play an active role at international, national, and district levels, to ensure elimination of the diseases.

Core principle 8

Sightsavers shall provide financial assistance on the basis that the government, at all levels, will honour its commitment to elimination of onchocerciasis and lymphatic filariasis by contributing substantially to programme costs.

Explanation of core principle 8

There are a few local NGOs active in the remote areas where onchocerciasis is endemic. Where local NGDOs do exist, or where faith based and community organisations play an important role in community life, they can be used effectively to advocate for the programme. Sightsavers will work with these organisations and encourage them to participate. Examples of local NGOs we have worked with or are working with are Christian Health Association of Liberia (CHAL) and United Front Against River blindness (UFAR) in DRC.

To maintain these programmes long-term requires less than an estimated US$0.20 per person treated per year. This figure is less than 3% of annual national health expenditure but provides for the provision of free drugs which are on the WHO Essential Medicines list and to which there is a right to access[10].

The 20 US cents annual unit covers mainly transport training and supervision costs. Ideally, after support from OCP and post APOC, all funds for onchocerciasis elimination should come from government at all levels. However, government departments often have difficulty in setting aside funds for elimination of onchocerciasis and LF. Sometimes, even where there is a dedicated line in the annual budget, circumstances may require it to be spent on other activities. Sightsavers is conscious that most of the districts where the disease occurs are poor, at the bottom of the UNDP Human Development Index, and beset by malaria, TB, and HIV/AIDS. HIV/AIDS and of recent Ebola Virus Disease in particular are putting the health services under severe strain, not only because of the resources needed to prevent and control it, but also because of its toll on health service personnel and CDDs. The NTD agenda has brought onchocerciasis to the front burner. Sightsavers will continue to press the governments in question to contribute the necessary funds to onchocerciasis elimination, reminding them of the size of the commitment made by bilateral donors, WHO and the NGDOs to commence mass treatment, and the millions contributed by Merck and Co Inc. and Glaxo Smith Kline in the form of the tablets donated, coverages which must be maintained and the funds needed to support them. Sightsavers will fund activities and review programme support at least every three years in the light of:

- Ratio of restricted funding to unrestricted funding
- Funding available from other sources
- Change in approaches to elimination of onchocerciasis and LF, such as data on when treatment with Mectizan® tablets and albendazole can be stopped, or if an alternative drug becomes available. We need to be adaptable to changing situations over time [11].

Core principle 9

Sightsavers recognises that the NTD programmes provide an opportunity to initiate eye health, education and social inclusion services. Sightsavers shall explore the opportunity of introducing eye health, education and social inclusion and related activities of benefit to and desired by the affected communities.

Explanation of core principle 9

Community Directed Intervention's (CDI) main thrust is community participation and ownership and has proved a suitable mechanism to deliver other related activities. The experience of a number of Sightsavers' country programmes, including Mali, Uganda, Nigeria, and Cameroon, is that cataract case-finding and primary eye care, vitamin A supplementation, Trachomatous Trichiasis (TT) finders, and rehabilitation of people blinded by onchocerciasis, are all possible using the CDTI strategy[12]. Furthermore, the onchocerciasis programmes and CDTI are a means to social inclusion (of persons with disabilities and other groups) and support delivery of the social inclusion strategy.

However it is important to ensure the recommended CDD: population ratio of 1:100 is adhered to to reduce the workload and improve retention. The role of the communities is to motivate volunteers in cash or in kind. The traditional kingship system has been reported to reduce attrition of CDDs, decrease demand for incentives and improve coverage rates[13].

Sightsavers would not pay CDDs or volunteers for distribution of medicines or reporting.

Core principle 10

Sightsavers shall play an active role in research, participate in the testing of new tools and evaluation activities in order to study the diseases, strengthen and make monitoring and programme implementation effective, and promote sustainable surveillance systems. Sightsavers shall also support selected scientific research and surveillance activities.

Explanation of core principle 10

Sightsavers and WHO in 1991 supported the Ivermectin trail in Kaduna State, Nigeria[14 15] and the impact of Ivermectin on optic nerve disease[16]. Also in the early 1990s, Sightsavers then River Blindness Coordinator pioneered community-based treatment models in Mali and later in Uganda and Nigeria. These were subsequently studied by WHO/TDR and developed into CDTI which became and has remained the core methodology underpinning elimination of onchocerciasis in Africa. Further research on a generic methodology Community Directed Interventions (CDI) is now widely used for other activities, eg providing bed nets to protect against malaria[17], as well as medicines against other NTDs such as lymphatic filariasis, trachoma, soil transmitted helminths and schistosomiasis.

Sightsavers funding and active participation in research studies by our staff have contributed enormously to the identification of the disease and appropriate treatment. Most recently, E Elhassan on CDTI[18], CDI[19], and Compliance to Annual treatment with Ivermectin; J. Oye[20] (REMO); D. Bakajika[21] and Nigerian Country office show the important role Sightsavers has played in furthering our understanding of the disease. Sightsavers will in future support selected research into the disease and impact studies on the effect of CDTI on individuals and communities. Sightsavers will also support post treatment surveillance procedures necessary to monitor fly activity and infection rates.

APOC's commitment to each project area was initially for a period of five years. A number of Sightsavers staff members have participated in the sustainability evaluations and the planning workshops which followed. This process is designed to identify essential input and activities needed to maintain the projects after. Taking account of the recommendations of these evaluations, Sightsavers has worked at community, district and NOTF levels to ensure that high treatment coverage continues with adequate support from government and the communities, and with minimum external support.

Core principle 11

Sightsavers recognises that collaboration is vital to the elimination of onchocerciasis and lymphatic filariasis in Africa and Yemen. Sightsavers shall advocate for additional support to onchocerciasis and lymphatic filariasis programmes and play an active role at international, national, and district levels, to ensure elimination of both diseases.

Explanation of core principle 11

Prevention of blindness from onchocerciasis through annual or bi-annual treatments with Mectizan® tablets and Albendazole is a cost-effective investment for Sightsavers. In 2013, for example, total field costs, plus a proportion of supervisory and indirect costs, amounted to £2.8 million, through which 33.4 million people were treated at

a unit cost of 8 pence. The drug is free of charge and there are minimal equipment costs, so that the cost of treatment is almost entirely people-related, principally training of community distributors and supervision of distribution and collection of records. Sightsavers staff members have chaired the Coordination Group and the NGDO Coalition to the NOTF in a number of countries. They have also sat on APOC's Technical Consultative Committee, the Mectizan® Expert Committee and Regional Programme Review Group. Given the diversity of organisations and interests within APOC (governments of participating countries, donor agencies, UN agencies, the private sector, and NGDOs) the partnership has worked well despite some misunderstandings, especially in the early stages. There is provision for frequent consultation through partners' meetings on specific topics, at the annual Joint Action Forum, and NGDOs can make their views known at the Committee of Sponsoring Agencies (the executive body on which NGDOs are represented). These consultations have helped overcome differences of views and solve problems encountered in the programmes.

Sightsavers and partners will continue to mobilise resources and to encourage more NGDOs to get involved in onchocerciasis elimination. At country level, Sightsavers shall intensify advocacy to policymakers for the support of elimination in order to protect the achievements of over 25 years and continue to free over 40 million people currently under treatment from the ravages of blinding onchocerciasis and lymphatic filariasis, and reach the more than 80 million yet to be treated.

Footnotes for Appendix 5

1. (Diawarra et.al. 2009) First Evidence from Studies in Mali, Senegal and Kaduna, Nigeria.
2. Afework H T, Elhassan E., Isiyaku S., Amazigo UV., Bush S., Noma M., Cousens S., Abiose A., Remme H (2012). Impact of long-term treatment of onchocerciasis with ivermectin in Kaduna State, Nigeria: First Evidence of potential for elimination of infection in an APOC supported Country, Parasite ans Vector: 5:28.
3. Treatment coverage means the number of people treated in a given year over the total population in the at-risk area; geographic coverage relates to the area deemed hyper, meso and hypo-endemic by the Rapid Epidemiological Mapping exercise.
4. Moses N Katabarwa, Peace Habomugisha, Albert Eyamba, Edson Byamukama, Philippe Nwane, Alex Arinaitwe, Julius Musigire, Ruth Tushemereirwe, Annet Khainza Community-directed interventions are practical and effective in low-resource communities: experience of ivermectin treatment for onchocerciasis control in Cameroon and Uganda, 2004-2010. Int Health 2015 Jul 7. Epub 2015 Jul 7.
5. MEC TCC Guidelines for use of Mectizan in Loa endemic areas. Reference: www.mectizan.org/resources/mec-tcc-guidelines-for-use-of-mectizan-in-loa-endemic-areas
6. Kelly Hope et al, 2015 on hyper endemic hotspots.
7. Kelly-Hope LA, Molyneux, DH, Bockarie, MJ. Can malaria vector control accelerate the interruption of lymphatic filariasis in Africa; capturing a window of opportunity? parasite vectors.2-13;22:1186-1756
8. WHO Progress towards eliminating onchocerciasis in the WHO Region of the Americas: verification by WHO of elimination of transmission in Colombia, 2013; 88: 381-388 Gustavsen, K, Hopkins, A, Sauerbrey, M. Onchocerciasis in the Americas: from arrival to (near) elimination. Parasite Vectors. 2011; 25: 4-205.
9. Lakwo et al. 2014. Successful interruption of Onchocerca volvulus in MPAMBA-Nkusi focus, Kibaale district , mid-western Uganda.
10. (Molyneux et al; 2014), Neglected tropical diseases: now more than just 'other diseases' – the post-2015 agenda. Int Health. 2014; 3: 172-80.
11. David H. Molyneux, Adrian, Hopkins, Mark, H. Bradley, 2014. Multidimensional complexities of filariasis control in an era of large-scale mass drug administration programmes: a can of worms. Parasite Vectors. 2014; 4: 1756-3305
12. Homeida et. al; 2002).APOC's strategy of community-directed treatment with ivermectin (CDTI) and its potential for providing additional health services to the poorest populations.
13. Moses N Katabarwa, Peace Habomugisha, Stella Agunyo, Alanna C McKelvey, Nicholas Ogweng, Solomon Kwebiiha,Fredrick Byenume, Ben Male, Deborah McFarland. Traditional kinship system enhanced classic community-directed treatment with ivermectin (CDTI) for onchocerciasis control in Uganda. Trans R Soc Trop Med Hyg 2010 Apr 27;104(4):265-72. Epub 2010 Jan 27.
14. Abiose, A. (1992). Implementing Treatment Programme with Mectizan: Field Reports. Summary Proceedings of the Symposium 'Mectizan (Ivermectin) and the Control of Onchocerciasis: Strengthening the Global Impact. Merck and Co Inc.
15. Abiose, A. (1993). Operational research for Ivermectin based-onchocerciasis control in Nigeria. Nigeria Journal of Ophthalmology, Vol. 2 No 1 p32-37.
16. Abiose, A., Jones, B. R., Cousens, S. N., Murdoch, I., Cassels-Brown, A., Babalola, O. E., Alexander, N. D. E., Nuhu, I. E., Evans, J., Ibrahim, H. F., and Mahmood, A. O. (1993). Reduction in incidence of optic nerve diseases with annual Ivermectin to control onchocerciasis. Lancet 341: 130 – 134.
17. WHO (2009), Community Directed Interventions for priority health problems in Africa: Results of a multi country study: Bulletin of world health org.2010 pp509-518.
18. Homeidal et.al.APOC's strategy of community-directed treatment with Ivermectin (CDTI) and its potential for providing additional health services to the poorest populations.
19. WHO (2009), Community Directed Interventions for priority health problems in Africa: Results of a Multi Country Study: Bulletin of world health org.2010 pp509-518.
20. APOC Rapid Epidemiology Mapping of Onchercias in Africa.
21. Moxidectin Trail Phase Three Study .Not yet published.

Annex

1. Context

1.1. The diseases

Onchocerciasis is the second leading cause of infectious blindness and lymphatic filariasis is the second leading cause of morbidity from NTDs in the world. The diseases are coendemic in several countries where we work and demonstrate the complexity of the epidemiology and co-treatment of both disease and highlight the need for a policy to provide guidance to support our work. As the need to adjust policy and strategy will change over the time period of the programme, the policy document needs to reflect flexibility in the varying epidemiological settings in which Sightsavers and country partners will operate.

1.2.1 Onchocerciasis

Onchocerciasis is caused by infection with the parasite Onchocerca volvulus which is transmitted to humans through the bite of a black fly which deposits infective larvae onto the skin of its human host. The infective larvae migrate into subcutaneous tissue and develop into adult worms with a lifespan of 10-15 years. The female worms which are located in sub cutaneous nodules produce millions of microfilariae, which migrate throughout the body and are primarily located in the skin, triggering intense inflammatory reactions resulting in irreversible blindness, general debilitation and skin disease displayed by a variety of changes to the skin:-leopard skin, papular eruptions, loss of elasticity and intense itching. There are no animal reservoir hosts of O. volvulus.

The pathology of the disease is more associated with blindness in western and central Africa while in eastern and southern parts of Africa it causes skin disease as a more common manifestation.

1.2.2 Lymphatic filariasis

Lymphatic filariasis; regarded by WHO in the 1990's as the world's leading cause of physical disability is caused by the parasite Wuchereria bancrofti and is transmitted by several different mosquito genera. Mosquitoes acquire microfilariae from the blood of the human host which after a period of development in the mosquito develop into infective larvae which migrate to the head of the mosquito and emerge from the proboscis when the insect takes a blood meal. When an infected female mosquito takes a blood meal, it deposits infective larvae onto the skin of a human host from where they invade the lymphatic system, develop into adults, mate and reproduce microfilariae over a lifespan of 4-6 years.

Lymphatic filariasis causes a wide range of acute and chronic clinical signs and symptoms such as regular acute filarial fevers, elephantiasis (swelling of the limbs) and hydrocele (gross scrotal enlargement). W. bancrofti also has no animal reservoir.

1.3 Partners, entities, allies and actors we work with

The elimination of onchocerciasis and lymphatic filariasis cannot be accomplished by single actors but requires action through well-defined, organized and committed partnerships. Presently, several partners including the World Health Organization, Mectizan® Donation Programme, GlaxoSmithKline, Non-Governmental Development Group for the Elimination of Onchocerciasis, The Global Programme to Eliminate Lymphatic Filariasis and countries represent the key entities and partners working with Sightsavers on the elimination of onchocerciasis and lymphatic filariasis. The programme is supported by other stakeholders including bilateral donors, academia, and philanthropic foundations.

The Global Alliance to Eliminate Lymphatic Filariasis (GAELF) plays a key role in supporting the Global Programme and the community of those committed to the elimination goal.

1.3.1 World Health Organization

The Onchocerciasis Control Programme (OCP) in West Africa was implemented from 1974 to 2002 in 11 countries in West Africa and covered an area inhabited by over 30 million people. The initial control strategy used by the OCP was weekly aerial spraying of insecticides over fast-flowing rivers and streams; the breeding sites of the black fly. Mectizan® was later included in the control strategy after 1988 when it was donated by Merck & Co. Inc. for as long as needed. With the donation of ivermectin, Sightsavers launched the first community-based distribution of ivermectin in Mali in 1989 – a model which formed the basis for the development of community-directed strategy in 1997. Following the closure of OCP, Special Intervention Zones (SIZ) were set up to address particular epidemiological problems due to failed vector control in Togo and reinvasion across borders in Benin and Burkina Faso using a combination of ivermectin distribution and aerial spraying of insecticides in selected foci.

The WHO resolution WHA47.32 on control of onchocerciasis through ivermectin distribution set the stage for a new approach to control onchocerciasis. The African Programme for Onchocerciasis Control (APOC) was launched in 1995 to extend control activities to other endemic countries, a partnership of Ministries of Health, local NGDOs, International NGDOs, the private sector (Merck and Co Inc.), donor countries, UN agencies and the beneficiary communities. The core of APOC's operational strategy is Community Directed Treatment with ivermectin (CDTI), following the approval of Mectizan® APOC's mandate covers 34 countries (23 APOC countries and 11 ex-OCP countries).

In 2009 publications suggested the interruption of transmission of onchocerciasis in Mali, Senegal (Diawarra et.al. 2009) and in Kaduna State, Nigeria by (Tekle et al, 2011). This led to a change in the APOC objectives and the onchocerciasis partnership committed itself to the goal of elimination of the infection/disease in Africa- a change in paradigm but one which presented significant new challenges to partners. The objective of onchocerciasis elimination was included in the WHO Road map targets in 2011/2012. However, APOC officially cames to an end in 2015 and The Special Project to Eliminate 5 PC-TDs in Africa was set up as a regional ten year programme with WHO/AFRO as the Executive Agency at the beginning of 2016. The plan for the project is an accelerated action to achieve elimination targets for lymphatic filariasis and onchocerciasis by 2020 and 2025 respectively.

1.3.2 Mectizan® Donation Programme

The launch of the Mectizan® Donation Programme (MDP) in 1987, by Merck and Co. created a number of new opportunities for onchocerciasis control. Merck's unprecedented offer to donate the drug in quantities needed for as long as required marked a sea change in the control of onchocerciasis; it also led to donations for other NTDs which have been the platform for the development of the global NTD initiative. As of 2013, more than 127 million treatments were approved for onchocerciasis for Africa and Latin America, 40 million for onchocerciasis and LF overlap areas and 127 million for LF only. The development of a broad partnership around the MDP and the GAELF played a key role, including non-governmental development organisations collaborating with the ministries of health in endemic countries.

1.3.3 GlaxoSmithKline

In 1998, following the unprecedented donation by Merck & Co. Inc., GlaxoSmithKline pledged the donation of albendazole for the elimination of lymphatic filariasis through the Mectizan® Donation Programme. Merck expanded the mandate of the programme to include lymphatic filariasis elimination through the co-administration of Mectizan® and albendazole in countries where lymphatic filariasis and onchocerciasis are co-endemic. This historic gesture of the pharmaceutical companies provided a "window of opportunity" for Sightsavers and other members of the non-governmental development organisation community (NGDOs) to increase support to countries for national LF elimination programmes.

1.3.4 The Non-Governmental Development Group for the Elimination of Onchocerciasis

The NGDO Group was formed by 7 founding NGDO agencies and World Health Organization (WHO) Prevention of Blindness Programme (PBL) to promote world-wide interest and support for the use of Mectizan® tablets to treat onchocerciasis and establish coordination of Mectizan® distribution activities. It successfully advocated for adoption of the WHO resolution WHA47.32 on control of onchocerciasis through ivermectin distribution in 1994. This facilitated the commencement of the African Programme for Onchocerciasis Control. Lessons learnt from Mectizan® donation, establishment of the NGDO Group and APOC partnership opened doors to other drug donations (Zithromax by Pfizer, Albendazole by GSK and several others) and the formation of other partnerships, such as the International Coalition for Trachoma Control (ICTC) with Global Alliance for Elimination of Blinding Trachoma by year 2020 in 1996 (GET2020) and Global Alliance to Eliminate Lymphatic Filariasis (GAELF) in 2000. The Group changed its name to the NGDO Group for Elimination of Onchocerciasis in 2013. It has supported the post of the Onchocerciasis Coordinator at WHO Geneva since 1992.

1.3.5 The Global Programme to Eliminate Lymphatic Filariasis

WHO launched a global programme to eliminate lymphatic filariasis and provided the framework for interruption of transmission of lymphatic filariasis through mass drug administration and managing morbidity and preventing disability. The programme is the most rapidly scaled up medicine administered in public health history given the number of endemic countries with active programmes in over 50 countries, providing some 600 million annual treatments. While the scale-up is rapid, it is incomplete. The programme needs 1,400 million treatments to achieve scale up; 464 million of these are in the Africa region. The donations of albendazole by GSK and Mectizan® by Merck & Co. Inc. were supplemented in 2010 by the donation of DEC by Esai. Hence all the drugs required for LF elimination were donated by the pharmaceutical industry.

1.3.6 Neglected Tropical Diseases NGDO Network

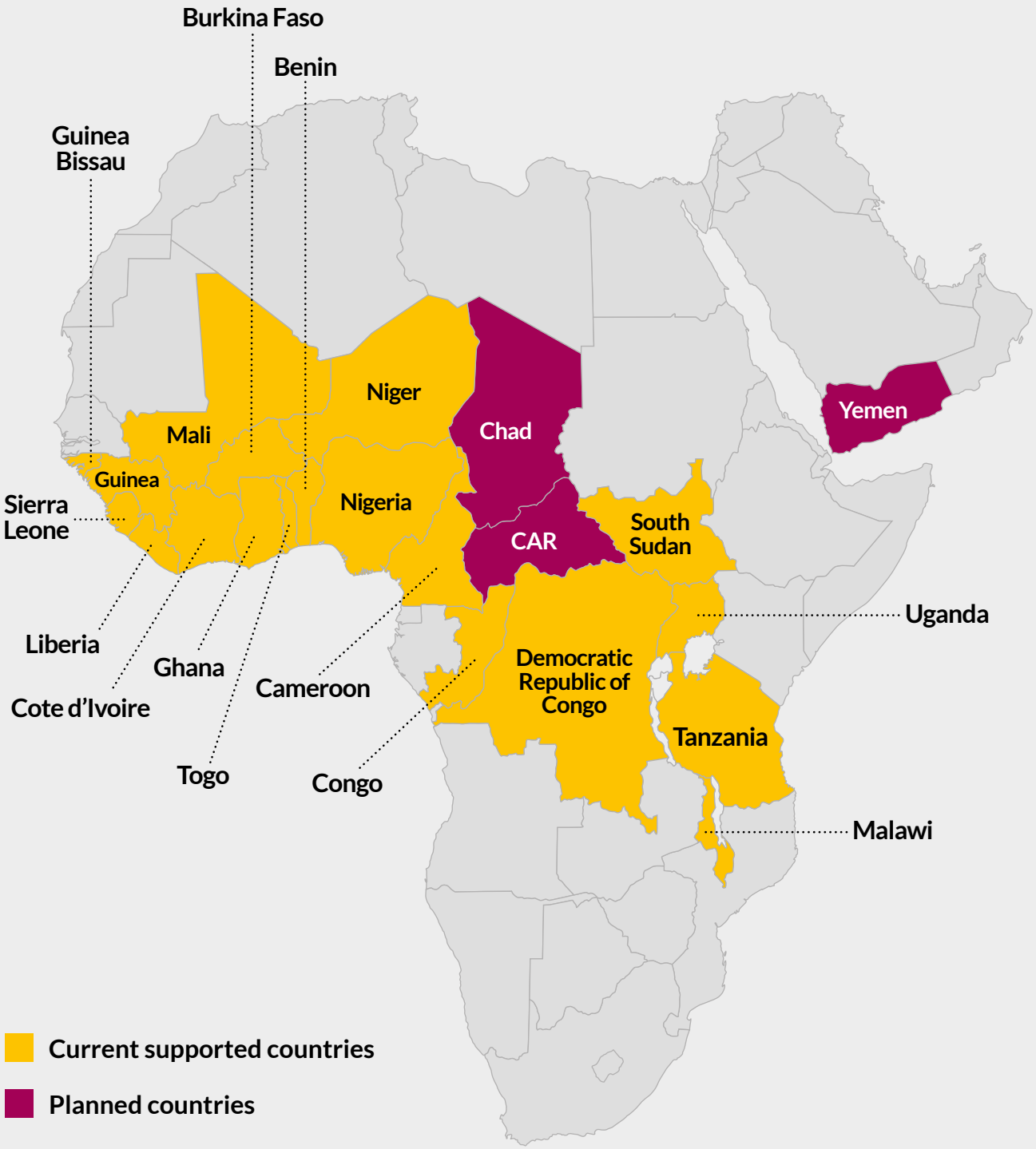
The Neglected Tropical Disease NGDO Network was established in 2009 to create a global forum for NGDOs working to control or eliminate onchocerciasis, lymphatic filariasis, schistosomiasis, soil transmitted helminths, trachoma, and leprosy. It consists of a broad range of partners including the NGDOs that work with ministries of health to implement and facilitate drug distribution for NTDs in the field, the pharmaceutical companies donating drugs for NTDs, the donor community, and operational research partners. The framework guiding the network includes advocacy at international level, coordination of NGDOs, sharing technical support, ensuring best practices, contributing to WHO guidelines, mobilising resources and supporting development of national task forces.

1.3.7 The London Declaration

Inspired by the World Health Organization 2020 roadmap to eliminate neglected tropical diseases,[1] officials from WHO, the World Bank, the Bill & Melinda Gates Foundation, the world's 13 leading pharmaceutical companies, and government representatives from US, UK, United Arab Emirate, Bangladesh, Brazil, Mozambique and Tanzania participated in a joint meeting in London in 2012 with the aim to eliminate or control 10 neglected diseases by 2020.

1.3.8 Sightsavers and elimination of onchocerciasis and lymphatic filariasis

Sightsavers has been a major player and leader in supporting countries in the fight against river blindness for almost four decades. Mectizan® treatments supported by Sightsavers increased from half a million treatments in 1993 to 33.4 million treatments in 2013 in eighteen countries. This accounted for 33% of the 104 million onchocerciasis treatments administered by APOC in Africa. Treatment for lymphatic filariasis started in 2011 and as of 2013, 44.3 million treatments were provided in seven countries representing 39% of the 144 million treatments by APOC in Africa.


Burkina Faso
Benin
Guinea Bissau
Niger
Mali
Chad
Yemen
Guinea
Nigeria
Sierra Leone
CAR
South Sudan
Uganda
Liberia
Democratic Republic of Congo
Ghana
Cameroon
Cote d'Ivoire
Tanzania
Togo
Congo
Malawi
Current supported countries
Planned countries

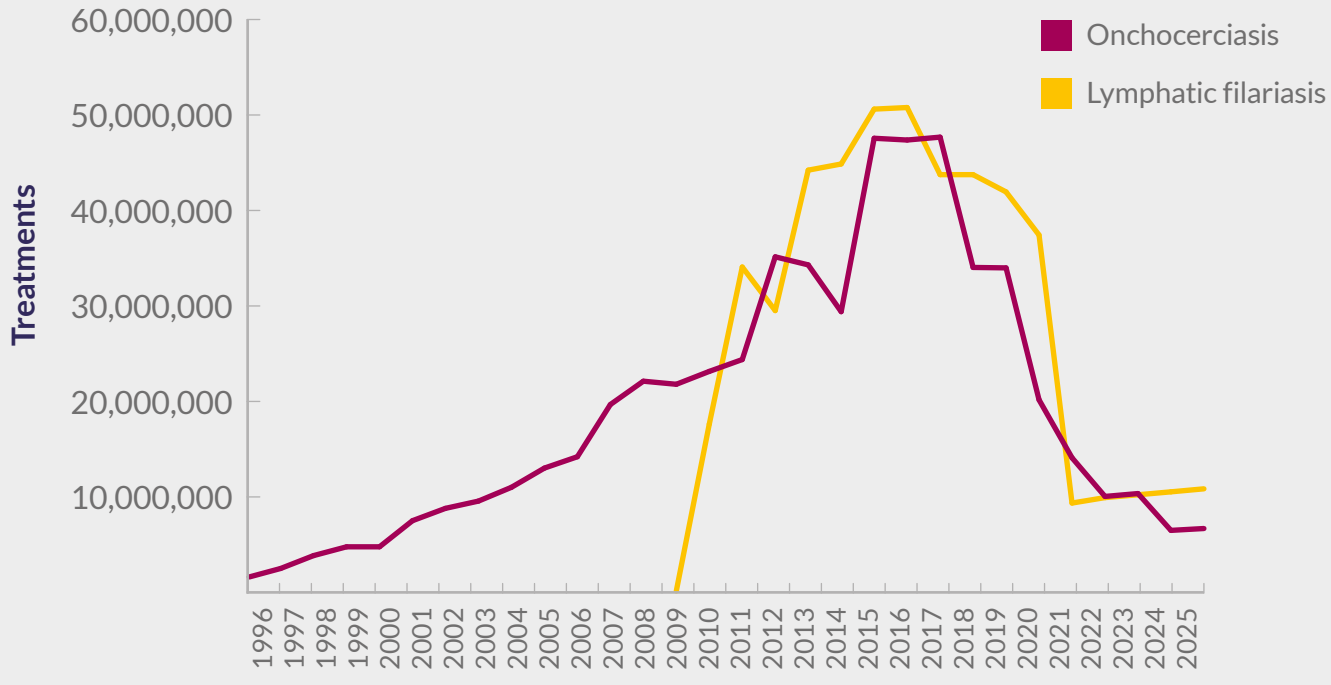
Appendix 6: Intervention plan towards elimination of onchocerciasis 2016-2025 in supported countries

Countries/Project name	10 year period starting 2016-2025									
	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Benin										
Benin										
Burkina Faso										
Burkina Faso										
Cameroon										
South West 1										
South West 2										
North West										
Western										
Cote d'Ivoire										
Cote d'Ivoire										
Democratic Republic of Congo										
Ituri Nord										
Ituri Sud										
Ghana										
Ghana										
Guinea										
Guinea										
Guinea Bissau										
Guinea Bissau										
Liberia										
North West										
South East										
South West										
Malawi										
Thyolo & Mwanza										
Malawi extension										
Mali										
Mali										
Niger										
Niger										
Nigeria										
Kaduna										
Kebbi										
Kogi										
Kwara										
Sokoto										
Zamfara										

Countries/Project name	10 year period starting 2016-2025									
	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Sierra Leone										
Sierra Leone										
Tanzania										
Tukuyu										
Ruvuma										
Morogoro Rural										
Tunduru										
Kilosa										
Tanga										
Mahenge (Kilombero district only)										
Togo										
Togo										
Uganda										
Masindi										
Buliisa										
Hoima										
Kibaale										

Continuing treatment Post stoppage surveillance Elimination confirmed

Appendix 7: Actual (1996-2015) and estimated (2016-2025) treatments data for onchocerciasis and LF



Appendix 8: References

Afework H T, Elhassan E., Isiyaku S., Amazigo UV., Bush S., Noma M., Cousens S., Abiose A., Remme H (2012). Impact of long-term treatment of onchocerciasis with ivermectin in Kaduna State, Nigeria: First Evidence of potential for elimination of infection in an APOC supported Country, Parasite ans Vector: 5:28.

Amazigo, U. (2008). African Programme of Onchocerciasis, *Ann Trop Med Parasitology. Sept; 102 Suppl 1: 39-44*

Bockarie JM et al. Role of vector control in the Global Programme to Eliminate Lymphatic Filariasis. Annual Review of Entomology, 2009, 54:469-487.

Bockarie JM, Baker et al. (1990). Progress in controlling the reinvasion of windborne vectors into the western area of the Onchocerciasis Control Programme in West Africa, *Phil Trans of Royal Society of London B* 328, 731-750.

Cavalli, A. et al. (2010). Interactions between Global Health Initiatives and Country Health Systems: The Case of the Neglected Tropical Diseases Control Programme in Mali. *PLoS Negl Trop Dis* 4(8).

Center for Disease Control (2013). Morbidity and Mortality Weekly report, 62 (20); 405-408.

Coffeng LE, Stolk WA, Zoure´ HGM, Veerman JL, Agblewonu KB, et al. (2013) African Programme for Onchocerciasis Control 1995-2015: Model-Estimated Health Impact and Cost. PLoS Negl Trop Dis 7(1): e2032.

Diawara, L et al. (2009). Feasibility of Onchocerciasis with Ivermectin Treatment in Endemic Foci in Africa: First Evidence from Studies in Mali and Senegal, *PLoS Negl Trop Dis 3(7).*

Eigege A, Kal A, Miri E, Sallau A, Umaru J, Mafuyai H, Chuwang YS, Danjuma G, Danboyi J, Adelamo SE, Mancha BS, Okoeguale B, Patterson AE, Rakers L, Richards FO: Long-lasting insecticidal nets are synergistic with mass drug administration for interruption of lymphatic Filariasis transmission in Nigeria. *PLoS Negl Trop Dis* 2013, 7:e2508.

Garms, R., Walsh, J.F., and Davies, J.B.Studies on the reinvasion of the Onchocerciasis Control Programme in the Volta River Basin by *Simulium damnosum* s.l. with emphasis on the south-western areas. *Trop. Med. Parasitol.*1979; 30: 345-362.

Hoerauf, A. (2003). Onchocerciasis, BMJ 326:207 Hopkins, D.R. (2002). Lymphatic Filariasis Elimination and Schistosomiasis Control in Combination with Onchocerciasis Control in Nigeria, Ann J. Trop. Med. Hygiene 67(3) pp 266-272.

Hotez, P.J. et al, (2007) Control of Neglected Tropical Diseases, *N Eng J Med*; 357: 1018-1027.

Hotez, P.J. (2009), Mass Drug Administration and Integrated Control for the Worlds High-Prevalence NTDs, *Translational Medicine*.
www.who.int/apoc
www.neglecteddiseases.gov/
www.who.int/alliance-hpsr/about/en/
www.globalnetwork.org/

Hugo C. Turner, Martin Walker, Thomas S. Churcher, Mike Y. Osei-Atweneboana, Nana-Kwadwo Biritwum, Adrian Hopkins, Roger K. Prichard and María-Gloria Basáñez (2014). Reaching the London Declaration on Neglected Tropical Diseases goals for onchocerciasis: an economic evaluation of increasing the frequency of ivermectin treatment in Africa, Clinical Infectious Diseases Advanced Access published June 18.

Kelly-Hope LA, Thomas BC, Bockarie MJ, Molyneux DH: Lymphatic Filariasis in the Democratic Republic of Congo: micro-stratification overlap mapping (MOM) as a pre-requiste for control and surveillance. Parasit Vectors 2011, 4:178.

Kelly-Hope LA, Molyneux DH, Bockarie MJ: Can malaria vector control accelerate the interruption of lymphatic filariasis transmission in Africa; capturing a window of opportunity? Parasit Vectors 2013, 6:39.

Kelly-Hope LA, Cano J, Stanton MC, Bockarie MJMD: Innovative tools for assessing risks for severe events in areas of overlapping loa loa and other filarial distributions: the application of micro-stratification mapping. Parasite Vectors 2014, 7:307.

Lakwo, T.L, R. Garms, Tukahebwa, L. Yameogo, A.W. Onapa, E. Tukesiga; F. Walsh, J. Ngorok; J. Katamanywa, C. Twebaze, P. Habomugisha, D.Oguttu, E. Byamukama, M.Katabarwa, F. Richards, T. Unnasch (In press): Successful interruption of the transmission of Onchocerca volvulus in Mpamba-Nkusi focus, Kibaale district, Mid-western Uganda.

Mectizan® Donation Programme. (2008), *Ann Tropical Medicine*; 102 Suppl 1: 39-44 Molyneux D H, Hopkins A; Bradley MH; Kelly-Hope, LA (2014). Multidimensional complexities of filariasis control in an era of large-scale mass drug administration programmes: a can of worms.

Multi Disease Surveillance Centre (2011) Proposal for Regional Onchocerciasis Surveillance towards Elimination (ROSE), Unpublished.

Reimer L, Thomsen E, Tisch D, Henry-Halldin C, Zimmerman P, et al. (2013) Insecticidal Bed Nets and Filariasis Transmission in Papua New Guinea. New England Journal of Medicine 369: 745-753.

Remme, JHF et al. (2010). Defining research to improve health systems. *PLoS Med* 7(11).

Richards FO, Emukah E, Graves PM, Nkwocha O, Nwankwo L, Rakers L, Mosher A, Patterson A, Ozaki M, Nwoke BEB, Ukaga CN, Njoku C, Nwodu K, Obasi A, Miri ES: Community-wide distribution of long-lasting insecticidal nets can halt transmission of lymphatic filariasis in southeastern Nigeria. *Am J Trop Med Hyg* 2013, 89:578-587.

Sightsavers (2009), Strategic Framework: Making the Connections, 2009-2013. Sightsavers (3rd Annual Report).

Spiegel, J.M. et al. (2010). Which New Approaches to Tackling Neglected Tropical Diseases Show Promise, *PLoS Med* 7(5).

Taylor, M.J, (2010) Lymphatic Filariasis and Onchocerciasis; The Lancet, published on line.

Van den Berg H, Kelly-Hope LA, Lindsay SW. Malaria and lymphatic filariasis: the case for integrated vector management. Lancet Infectious Diseases, 2013, 13:89-94.

WHO (2009), Year 2009 Progress Report, African Programme for Onchocerciasis Control, Publication of WHO/APOC.

WHO (2009), Informal Consultation on Elimination of Onchocerciasis Transmission with Current Tools in Africa – "shrinking the map", *Publication of WHO/APOC*.

WHO (2009), Community Directed Interventions for Priority Health Problems in Africa: Results of a Multi-Country Study: *Bulletin of World Health Org*. 2010 pp 509-518.

WHO (2009). Informal Consultation on Onchocerciasis Transmission with Current.

WHO (2010), Report of the External Mid-Term Evaluation of the African Programme for Onchocerciasis Control, *Publication of WHO/APOC*.

WHO (2010), Moving from Control to Elimination where Feasible: forecasting and categorisation of APOC projects, *Publication of WHO/APOC*.

WHO (2010). Global Programme to Eliminate Lymphatic Filaraisis. Progress report 2000-2009 and strategic plan 2010-2020. Geneva.

WHO (2010). Conceptual and Operational Framework of Onchocerciasis Elimination.

WHO (2010). Moving from Control to Elimination Where Feasible: *forecasting and categorisation of APOC projects*.

WHO (2011). Global Programme to Eliminate Lymphatic Filariasis: progress report. Weekly Epidemiological Record, 2012, 87(37): 346-356.

World Health Organisation (2011). Lymphatic filariasis: monitoring and epidemiological assessment of mass drug administration programme. A manual for national elimination programmes. Geneva, (WHO/HTM/NTD/PCT/2011.4).

WHO (2012). Transmission assessment surveys in the Global Programme to Eliminate Lymphatic Filariasis. WHO position statement. Geneva, (WHO/HTM/NTD/PCT/2012.9).

WHO (2012). Provisional strategy for interrupting lymphatic filariasis transmission in loiasis-endemic countries: report of a meeting on lymphatic filariasis, malaria and integrated vector management, Accra, Ghana, 5-9 March 2012. Geneva.

WHO (2012). The roadmap for NTDs: Accelerating work to overcome the global impact of neglected tropical diseases: a roadmap for implementation (WHO/HTM/NTD/2012.1).

WHO (2013). Morbidity Management and disability prevention in lymphatic filariasis.

WHO (2013). Concept Note: Transforming APOC into a new regional entity for onchocerciasis and lymphatic filariasis elimination and support to other PC/NTDs.

WHO (2013). Sustaining the drive to overcome the global impact of NTDs.

WHO (2013). Programme for the Elimination of Neglected Diseases un Africa (PENDA)-Strategic Plan of Action and Indicative Budget 2016-2025.

WHO (2014). Weekly Epidemiological Record: Meeting of the International Task Force for Disease Eradicaton. No. 15, 89: 153-160.

Yaounde Declaration on Onchocerciasis Control in Africa (2006); A Declaration of African Ministers of Health on the future of onchocerciasis in Africa.

Yumkella, F. (1996), Women, Onchocerciasis and Ivermectin in Sierra Leone, Research Study Carried out for the Special Programme for Research and Training in Tropical Disease (TDR).

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