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AFRICAN PROGRAMME FOR
ONCHOCERCIASIS CONTROL

Strategic Plan of Action and Budget 2016 – 2025

for Elimination of Onchocerciasis in Africa

OCTOBER 2012
PROVISIONAL AGENDA ITEM 13
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World Health Organization

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This document has been prepared at the request of the seventeenth session of the Joint Action Forum of APOC held in Kuwait City, Kuwait, in December 2011. For more information please contact: dirapoc@oncho.afro.who.int

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(APOC, 17th session of the Joint Action Forum, Final Communiqué)

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Abbreviations

APOC	African Programme for Onchocerciasis Control
CDDs	Community-Directed Distributors
CDI	Community-Directed Intervention
CDTI	Community-Directed Treatment with Ivermectin
CSA	Committee of Sponsoring Agencies
HIV	Human Immunodeficiency Virus
HSAM	Health Education /Sensitization /Advocacy /Mobilisation
ITNs	Insecticide-treated bed nets
JAF	Joint Action Forum (APOC governing body)
LF	Lymphatic Filariasis
MDA	Mass Drug Administration
MDGs	Millennium Development Goals
MDP	Mectizan® Donation Program
NGDOs	Non-Governmental Development Organisations
NOTF	National Onchocerciasis Task Force
NTD	Neglected Tropical Disease
OCP	Onchocerciasis Control Programme in West Africa
PCT	Preventive Chemotherapy
PHC	Primary Health Care
RAPLOA	Rapid Assessment Procedure for Loa loa
REA	Rapid Evaluation and Assessment
REMO	Rapid Epidemiological Mapping of Onchocerciasis
SIZ	Special Intervention Zones
TA	Technical Assistance
TAS	Transmission Assessment Survey
TCC	Technical Consultative Committee (APOC scientific advisory group)
TDR	Special Programme for Research and Training in Tropical Diseases sponsored by UNICEF/UNDP/World Bank/WHO
TRC	Technical Review Committee
TZ	Transmission Zone
TZA	Transmission Zones Assessment
WHO	World Health Organization
WHO/AFRO	World Health Organization Regional Office for Africa

Executive summary

Progress in onchocerciasis control has resulted in the imminent elimination of the disease. For a considerable number of years the disease hindered economic development, caused chronic life-long disability, and impaired development in poor and disenfranchised communities.

Where are we?

Between 2005 and 2011, APOC spent time collecting evidence on progress towards elimination. Following the successful treatment of the disease using ivermectin with the active leadership of communities the microfilaria load in humans decreased significantly. The first results showing that ivermectin treatment can stop and that transmission is likely to have been broken were produced in three selected foci in Mali and Senegal. In 2011 the CSA Advisory Group on Elimination produced modelled maps predicting end game dates. Their models suggests that by 2015, assuming recommended geographical and therapeutic coverage is met, all APOC participating countries can achieve control targets and with appropriate support, sustain control activities beyond 2015. It is estimated that 12 project areas with a population of 7.4 million have already been freed of the disease. When the modelling was extended to 2020, Angola, Burundi, Cameroon, Chad, Congo, Ethiopia, Malawi, Mozambique, Nigeria, Tanzania, and Uganda had a positive prospect of elimination.

In consideration of the positive outlook, the independent evaluators in 2010 recommended that closing APOC in 2015 will be too costly in terms of return on investment. The Communiqué from JAF 17 on the Future of APOC endorses the recommendation of the independent evaluators:

> *"JAF reaffirmed its endorsement for the Programme to pursue the elimination of onchocerciasis in Africa as well as co-implementation of preventive chemotherapy interventions for other selected NTDs in the context of increased support to community-level health systems strengthening. The Forum therefore requested the CSA and APOC management to submit a detailed new plan of action with costs reflecting the new expanded strategic direction for the programme beyond 2015 for consideration by JAF18."*

The Strategic Plan of Action and Budget 2016-2025 for the elimination of onchocerciasis in countries was prepared based on the above directive for the consideration of JAF 18. The vision of the plan of action is to eliminate onchocerciasis in 80 percent of African countries. Implementation of the plan will also help strengthen health systems at community level while implementing CDI will help scale-up interventions against other NTDs to the benefit of the wider national health systems.

What is going to be different?

In the context of a renewed global commitment for tackling neglected tropical diseases the African Programme for Onchocerciasis Control (APOC) will be repositioned to address the new orientation, shifting from a control programme to an elimination one,[1] and pursuing the following objectives for the period from 2016-2025:

1. Eliminate Onchocerciasis in 80% of endemic countries in Africa by 2025.
2. Collaborate with relevant programmes and partners to implement community-directed interventions to control/eliminate LF and other selected PCT-NTDs in all onchocerciasis endemic countries in Africa.
3. Collaborate with relevant programmes and partners to strengthen community health systems in all onchocerciasis and LF endemic countries in Africa.

In limited geographic areas Lymphatic Filariasis MDA has reached 75% of the people living in an endemic district and 100% of endemic districts in seven countries in Africa. When other preventive measures are associated with MDA, such as vector control and the consistent use of bed nets, the number of years required for elimination of the infection may be reduced particularly in areas with low endemicity. By 2016 and with a scaled up effort in collaboration with other partners it is estimated that a total of 200 million people in 20 countries can be reached, escalating from 30 to 106 million people treated. MDA for LF will have prevented the same number of new infections; saved about one million new born every year from infection and averted or arrested clinical progression of 600 000 cases of lymphedema/hydrocele. This however will result in only seven (7) out of forty (40) countries (Tanzania, specifically for Zanzibar, Comoros, Gabon, Gambia, Burkina Faso, Malawi and Ghana) being removed from the LF Africa endemic countries list by 2016. Implementing the programme for another five to seven years, will ensure that at least seventeen (17) additional affected countries can hit elimination and certified by 2025. With a focused plan working with other partners, two major and related intervention diseases – onchocerciasis and Lymphatic Filariasis will have seen elimination under the current plan of action in at least twenty countries.

The proposed activities emphasise systems and communities resilience against unpredictability and central system weaknesses; the importance of maintaining focus on onchocerciasis and Lymphatic Filariasis elimination and its contributory effect on other selected Neglected Tropical Diseases; transformation of the CDTI framework into community health systems; the need for continuity in legal undertakings (Memoranda of Understanding), and the importance of increased country ownership, financial commitment and graduating them off the programme. A log frame has been developed showing clearly the indicators for measuring progress against each of the objectives. In areas where Onchocerciasis and Lymphatic Filariasis are co-endemic the two programmes will carry out joint interventions to update disease mapping and to scale up treatment, particularly in untreated onchocerciasis (low endemicity) areas where Lymphatic Filariasis is prevalent. Sharing data and coordinating mass treatment and epidemiological evaluations will allow significant cost-saving and more efficient programme planning.

[1] The programme name may be changed in the future accordingly.

What are we getting?

Benefits of the LF and Onchocerciasis programme in poverty reduction are directly related to the disability prevented by the medication. This includes the prevention of the full clinical manifestations in infected adults and days lost due to severe itching, fever, blindness and lymphadenitis which affect infected patients. The loss of productivity of infected people compared to healthy people is of 58%. Through mass drug administration of ivermectin or diethylcarbamazine citrate (DEC) together with albendazole (from GlaxoSmithKline) the Global Programme to Eliminate LF has treated almost 2 billion people over the past 8 years, thereby averting 32 million disability-adjusted life years, and at a cost of only $14–$30 per DALY averted.[2] The active transmission of LF has also been interrupted in several countries. So far the number of DALYS averted by Onchocerciasis programme is estimated at 7.5 million as every infection averted constitutes a saving of 0.07 DALYS according to WHO and recent studies.[3]

The elimination of oncho and LF using this strategy will be one of the most cost effective interventions in public health and a step forward to poverty reduction. By 2025 the repositioned APOC will have averted an estimated additional 6 million Disability Adjusted Life Years (DALYs) over the period as a result of onchocerciasis and an additional 4 million for Lymphatic Filariasis. Further, the 'off-target' effect of ivermectin and albendazole on other diseases may add another 1 million DALYs (13%). By 2025 an estimated total of eleven (11) million DALYs averted is anticipated. This will drop the current APOC cost per DALY averted of approximately US$ 48 to just about US$14 per DALY averted. The funds to be provided by sponsors will leverage and provide resources for the implementation of national activities to intensify treatment and phase out of MDA in onchocerciasis endemic countries. Specifically:

- Mapping, Transmission Assessment Survey (TAS) and Transmission Zones Assessment (TZA) undertaken, bottlenecks analysis done and projected end dates for onchocerciasis and Lymphatic Filariasis concluded.
- All onchocerciasis endemic countries except a few foci in Central African Republic, Democratic Republic of the Congo and South Sudan by 2025 and additional 16 countries for Lymphatic Filariasis will be removed from the respective diseases endemic country map. This will significantly reduce to just under 20 million or approximately 8% of the at risk population from the estimated 150 million at start of 2016.
- National and community health systems strengthened with over 500 000 community health workers trained to deliver integrated PCT-based through at least 170 integrated community health system based on the CDI model.
- Capacities of seven NTD laboratories will have been revitalised, and integrated into a regional network to assure quality control. This network will also be capable of providing key laboratory services (microscopy, entomology dissection, serology and PCR).

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2 Laxminarayan R, Mills AJ, Breman JG, Measham AR, Alleyne G, et al. (2006) Advancement of Global Health: Key Messages from the Disease Control Priorities Project. *Lancet* 367: 1193–208.

3 Lesong Conteh, Thomas Engels and David Molyneux: Socioeconomic aspects of neglected tropical diseases. *Lancet* 2010;375: 239-47

- Forty (40) health professionals will have received their masters or doctorates in an NTD and community health systems management field and jointly published at least 40 research papers on NTDs and health systems

Do we have value for money?

Given a project estimated cost of US$ 151 800 000 over the 10 year period this is US$ 14 per DALY averted which is less than 34% of the cost so far incurred by APOC per DALY averted. This is about 10 cents per treatment over the period and makes the new strategy proposed very cost effective and efficient in delivery of a much higher amount of services. The lower cost however should be seen as a result of the accumulated gains made over the years by the APOC programme and other partner interventions. This cost can be reduced immediately to half when extra benefits of MDA other interventions co-implemented and systems strengthened are incorporated.

When medicines are factored in, the cost to sponsors of the initiative will be in the range of 0.16 cents per treatment, 0.40 to 0.80 cents per person treated should they receive two MDA rounds. This monetary contribution will be matched by the effort of the communities in country; bearing 60-90% of the actual costs of the treatment in terms of economic costs[4] and the provision of drugs by the pharmaceuticals company estimated at an annual value of circa USD$ 1 billion.[5]

The plan of action and budget assumes that certain foundational and key activities necessary to prepare countries towards elimination started since 2012 and will continue through 2015. These activities are contained in separate plans of action and budget. It is also important to note that the focused activities may be reviewed following the 2015 independent evaluation which should be conducted to have a better understanding of achievements.

[4] Ann S. Goldman et al: National Mass Drug Administration Costs for Lymphatic Filariasis Elimination. PLoS Neglected Tropical Diseases (www.plosntds.org). October 2007; Volume 1, Issue 1, e67.

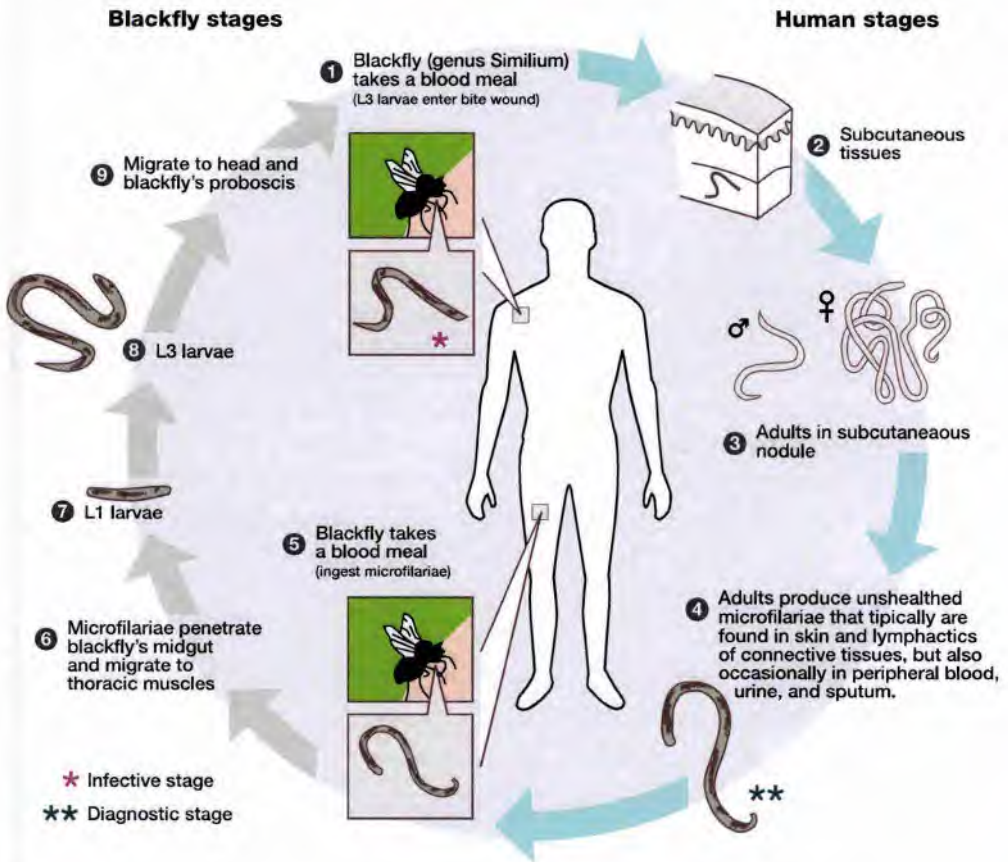
[5] This includes the donation of 120 million tablets of DEC by Sanofi, Esai and Bill and Melinda Gates Foundation, 600 million tables of Albendazole by GSK and unlimited number of Invermectin by MSD (http://www.dfid.gov.uk/Documents. United to combat NTDs; table of commitments.

1. Overview of onchocerciasis control to date

1.1 The disease

Onchocerciasis also known as river blindness, caused by the filarial worm *Onchocerca volvulus*, is transmitted through the blood meal of infected *Simulium damnosum* or black fly that breeds in fast flowing streams and rivers. Infection in humans manifests as intense itching, disfiguring dermatitis, and eye lesions and over time leads to blindness. Economically, onchocerciasis leads to loss of productive labour and abject poverty. The life cycle of the parasite is shown below.

Figure 1. Life cycle of the *Onchocerca volvulus* parasite



Source: CDC (www.dpd.cdc.gov/dpdx)

About 99 percent of those infected with *Onchocerca volvulus* reside in 31 endemic countries in Africa. The WHO Expert Committee on Onchocerciasis estimated that 17.7 million people were infected in 1995;[6] rapid epidemiological mapping of Onchocerciasis[7] (Noma and others, 2002) by the African Programme for Onchocerciasis Control (APOC) estimated that about 37 million people were infected in 1995, which corresponds to an estimated 1.99 million DALYs lost.

1.2 The Onchocerciasis Control Programme in West Africa (OCP)

Onchocerciasis control strategies have evolved significantly over the last three decades. The Onchocerciasis Control Programme in West Africa (OCP), launched in 1974, used aerial larviciding of vector breeding sites in river rapids. In 1987 Ivermectin became accepted as an efficacious drug on the microfilaria and registered for the treatment of human onchocerciasis. Merck & Co., Inc. developers of the drug, pledged free donation of the drug to fight the disease so long as it was needed. This transformed the way in which the disease was tackled. The new intervention design focused on the human phase of the life cycle of the disease. The multi-track approach helped in controlling the debilitating effect of the disease, reclaiming arable land for economic activities and freeing human capital of disability that affected their productivity. In 2002, OCP ceased all operations and had succeeded in controlling the disease in ten of the eleven countries.[8] It focused on achieving the following in 28 years of activity.

- Protected an estimated 40 million people from Onchocerciasis.
- Prevented about 600 000 persons from becoming blind.
- Reclaimed 250 000 sq kilometres of previously abandoned land that could now be occupied and farmed.
- Made a net value of gains estimated by the World Bank as equating to about 20% return on investment.

Among the countries covered by OCP, Sierra Leone fell behind because of civil conflict. Four areas were declared Special Intervention Zones (SIZ) within the controlled countries where prevalence and intensity of infection had declined but the entomological situation remained unsatisfactory. These were the Pru river basin in Ghana; the tributaries of Oti river in Togo; the Mafou and Tinkisso river basins in Guinea. Sierra Leone was added to the SIZ because of its peculiarity.

1.3 The African Programme for Onchocerciasis Control

In May 1994 the World Health Assembly adopted resolution WHA47.32[9] on "Onchocerciasis control through ivermectin distribution". The resolution emphasised sustaining the achievements of OCP and the engagement of all stakeholders to promote ivermectin distribution in tackling the disease. The African Programme for Onchocerciasis Control

[6] Jan H. F. Remme, Piet Feenstra, P. R. Lever, André Médici. *Tropical Diseases Targeted for Elimination: Chagas Disease, Lymphatic Filariasis, Onchocerciasis, and Leprosy*, page 433-449.

[7] Rapid Epidemiological Mapping of Onchocerciasis (REMO): its application by the African Programme for Onchocerciasis Control (APOC): *Annals of Tropical Medicine and Parasitology*, vol. 96, supplement no. 1, S29-S39 (2002).

[8] Benin, Burkina Faso, Cote d'Ivoire, Ghana, Guinea, Guinea-Bissau, Mali, Niger, Senegal and Togo.

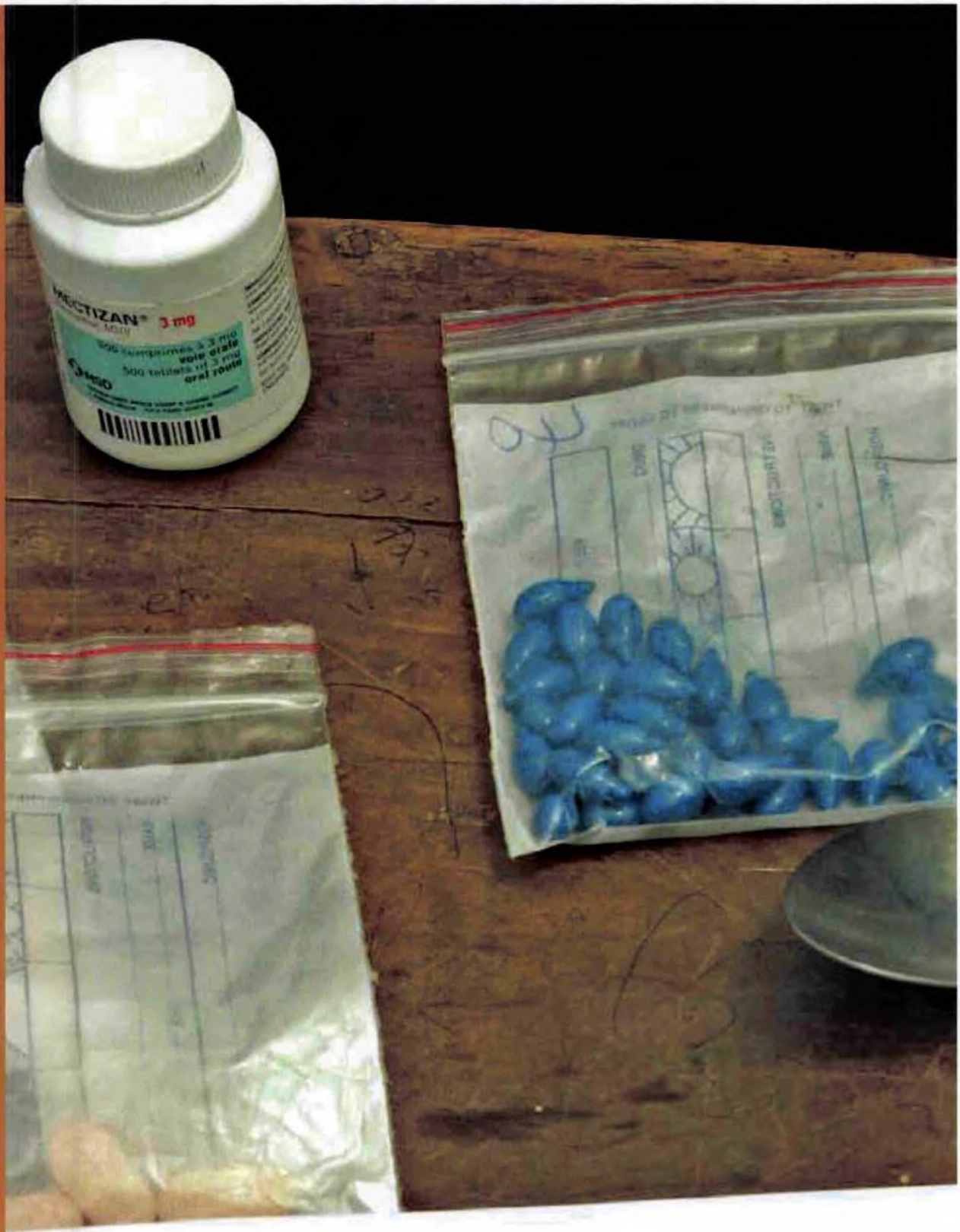
[9] Hbk Res., Vol. III (3rd ed.), 1.16.3.3(Fourteenth plenary meeting, 12 May 1994 -Committee A, fourth report).

(APOC) emerged as the institutional framework for implementation. APOC activities originally covered nineteen (19) countries.[10] With South Sudan, the Programme covers 20 countries.

APOC is a programme managed through a dynamic governance partnership. The formal engagement is based on a *Memorandum* signed by partners as a legal agreement. An APOC Trust Fund managed by the World Bank has been established. The APOC Secretariat serves as the nexus for managing the partnership and provides both technical guidance and financial support to countries. A multi-country study undertaken by the Secretariat in 1997 to ascertain the most cost effective way of getting the drug to the target population found that Community-Directed-Treatment with Ivermectin (CDTI) was a reliable and cost effective approach. APOC has since supported the establishment of CDTI in countries as a flagship strategy of the Programme.

Over 17 years APOC has helped the disease-endemic countries to successfully extend CDTI coverage to a total population of approximately 70 million people, as ivermectin (Mectizan®) reaches over 140 000 communities in APOC participating countries. Approximately 77% of the population at risk has been treated as of 2011.

[10] Angola, Burundi, Cameroon, Central African Republic, Chad, Congo, The Democratic Republic of the Congo, Equatorial Guinea, Ethiopia, Gabon, Kenya, Liberia, Malawi, Mozambique, Nigeria, Rwanda, Sudan, The Republic of Tanzania and Uganda.



NAMES IN FULL		AGE		HT	IVM	ALB	VIT
BEYARAZA	JOVENITA	F	37	152	4	DA	D
EKYOSIMIRE	MICHUS	F	15	56	3	DA	D
WEBAZE	DOREKA	F	10	90	2	1	1
WOYESIGA	ALIVANI	M	8	98	1	1	1
MUSINGUZI	ISHMAEL	M	5½	95			
MWAMANYA	ELIAS	M	3½	4			

2. Business case: orienting APOC to eliminate onchocerciasis, address selected PCT-NTDs and strengthen community health systems

2.1 Co-endemicity of Onchocerciasis, Lymphatic Filariasis and Loiasis

About 1.4 billion persons are living with at least one of the neglected tropical diseases. Seven of the major Preventive Chemotherapy based-NTDs (PCT-NTDs) represent about 90% of the total burden. These are Ascariasis (807 million infected), Trichuriasis (604 million), Hookworm (576 million), Schistosomiasis (207 million), Lymphatic Filariasis (120 million), Trachoma (84 million) and Onchocerciasis (37 million).[11] Sub-Saharan Africa is home to about 50% of the estimated global burden of NTDs. Unfortunately, most of these are incompletely mapped across the region. There are existing technologies and medicines that are effective against many of the conditions as shown in the table marked **Annex 1** with commitment for medicines supply from manufacturers.

Efforts are currently being made to eliminate or control NTDs that have affected the poorest and most deprived members of the communities for centuries. Twenty nine partner organizations came together on 30 January 2012 to state their commitment to ensure NTDs are eliminated by 2020. Global health organizations, the governments of the UK, US, UAE and Brazil among others, pharmaceutical companies and non-governmental and non for profit organizations are together in this effort. Endemic countries in Africa and Asia are also streamlining their programmes and increasing their efforts to ensure communities at risk in their territories are identified and treated.

Onchocerciasis

Onchocerciasis as indicated earlier has had the longest running intervention. The success of the Programme to achieve elimination depends on the strength of Mass Drug Administration (MDA), functionality of the Community Directed Intervention (CDI) systems, and the accurate reporting of the geographical and therapeutic coverage. The target is to achieve and sustain 80% therapeutic and 100% geographic coverage in all endemic areas. To achieve Onchocerciasis elimination using ivermectin treatment, the CSA advisory group on Onchocerciasis elimination has advised that current population coverage might have to be increased by about 20 percent to include areas not initially covered by CDTI and that have nodule prevalence above 5%.

[11] Global Network for Tropical Disease Press Center (htt://globalnetwork.org/press; End the Neglected Blog (http://www.endtheneglect.org); Madhuri R, Sudeep SG, Sunila RK, et al. Oral Therapy for Multiple Neglected Tropical Diseases: A Systematic Review. JAMA 2007; 298 (16):1911-1924 [1].

Lymphatic Filariasis (LF)

Lymphatic Filariasis is endemic in 42 African countries which is approximately 36% of the global burden. The disease prevalence ranges from as low as 3% to as high as 50% in communities. The disease is not fully mapped. A rapid assessment of the geographical distribution of filariasis is being used to provide a basis for developing country specific elimination programmes. So far Benin, Burkina Faso, Ghana, Tanzania and Togo have mapped LF distribution and have started MDA activities using a combination of ivermectin and albendazole. The disease is targeted for elimination by 2020. To achieve this, MDA has to hit 80% therapeutic and 100% geographic coverage for five to six consecutive years. A significant advantage of recently advanced filariasis control strategies is that, they can be easily co-implemented using pre-existing Community Directed Intervention programmes aimed at other public health problems such as onchocerciasis, malaria, and intestinal parasites.

Loa loa

Loa loa or *loiasis* is a disease transmitted by *Chrysops* species. The disease has been shown to be present mainly in the Democratic Republic of the Congo. Treatment with ivermectin in *Loa loa* patients can result in the occurrence of encephalopathy and this has impeded the use of Mass Drug Administration with combination drugs to treat Lymphatic Filariasis and onchocerciasis where any of these diseases is co-endemic with *Loa loa*. The diseases are therefore managed according to the MEC/APOC/TCC guidelines including a case by case approach at health facility level.

2.2 Case for intensifying joint efforts for eliminating Onchocerciasis and Lymphatic Filariasis

Both onchocerciasis and Lymphatic Filariasis have established systems for determining breakpoints for elimination and when and how to stop treatment. However, for onchocerciasis to be certified in areas where it is co-endemic with LF, which is more of the norm than the exception, treatment for Lymphatic Filariasis should have been suspended following a Transmission Assessment Survey (TAS). The TAS process is very similar to the Transmission Zones Assessment (TZA) process approved by Joint Action Forum as the "Conceptual and operational framework of Onchocerciasis elimination with ivermectin treatment"[12] as shown in **Figure 2**.

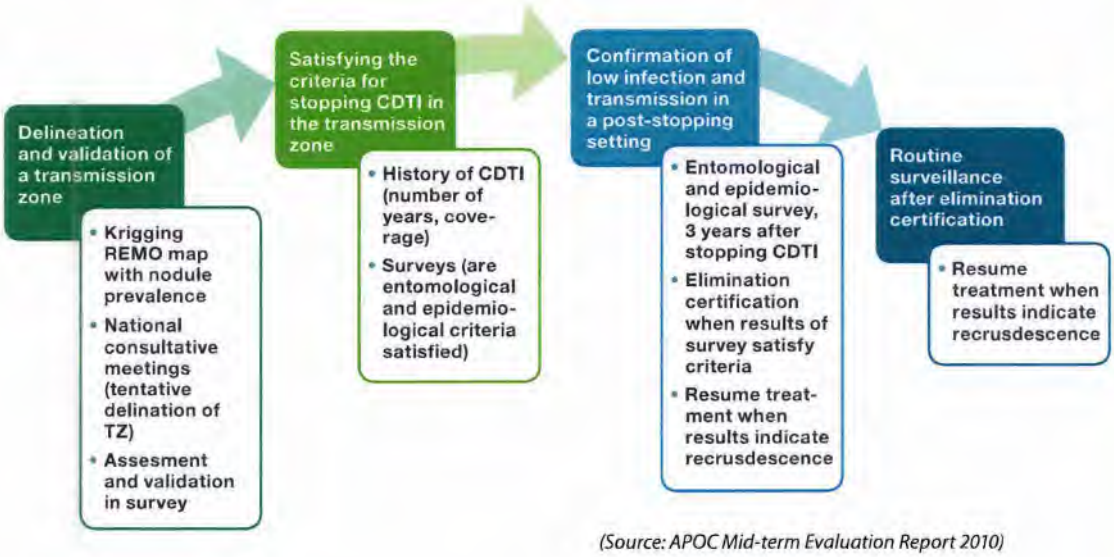
Eliminating onchocerciasis

Under the Onchocerciasis programme, progress and effectiveness of Community-Directed Treatment with Ivermectin (CDTI) coverage is the primary determinant of the success of elimination. The APOC partnership has helped onchocerciasis endemic countries to successfully extend CDTI coverage to approximately 80 million people in 2011 as ivermectin reached 142 338 communities in 16 countries across sub-Saharan Africa that year. It has treated approximately 77% of the total population including communities of several countries affected by security issues.

Between 2009 and 2011 there has been a significant improvement in therapeutic coverage from 64% to 76% in countries in or emerging from conflict.

[12] APOC: Conceptual and operational framework of onchocerciasis elimination with ivermectin treatment Ouagadougou: African Programme for Onchocerciasis Control; 2010.

Figure 2. Four stage activities towards onchocerciasis elimination

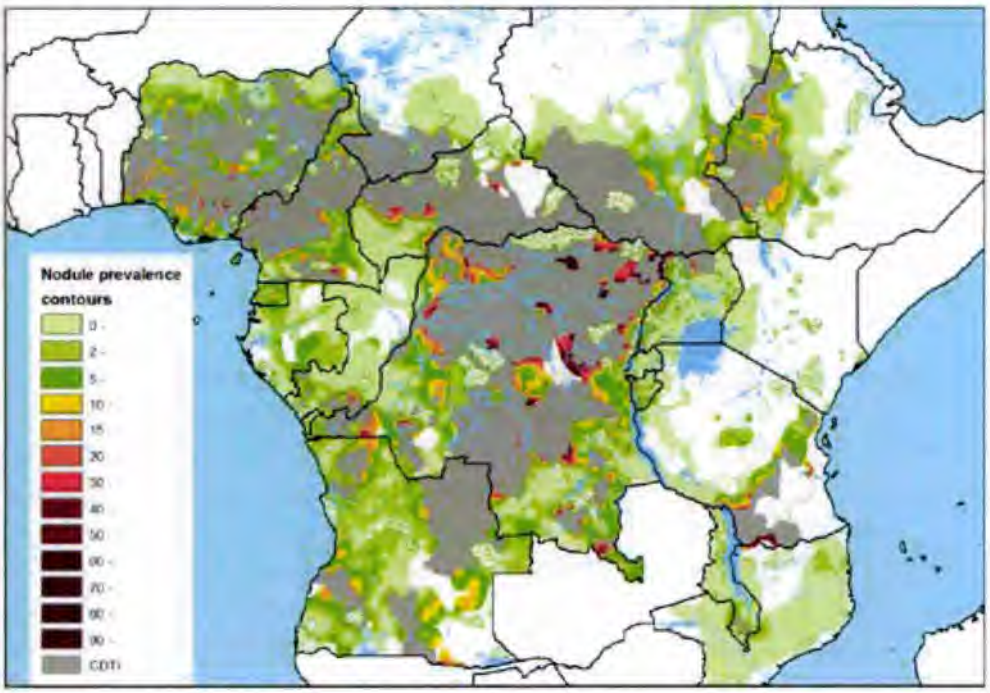


(Source: APOC Mid-term Evaluation Report 2010)

When the areas of programme intervention (Ivermectin treatment areas) are overlaid with known areas of disease prevalence, there is a striking convergence that is attributed to the effective implementation of the programme by community health workers. This gave more than anticipated outcomes as shown in Figure 3.

Using available baseline nodule prevalence data and treatment coverage results reported by countries to map progress, APOC generated evidence suggesting the onchocerciasis

Figure 3. Current ivermectin treatment areas with pre-control prevalence levels



(Source: Report of the CSA advisory group on onchocerciasis elimination, 2011)

prevalence map of Africa has shrunk significantly. Results of epidemiological evaluations in 2008-2011 in participating countries showed that in 12 evaluated sites with a total population of 7.4 million people, onchocerciasis elimination has probably already been achieved. This will be confirmed once the on-going entomological evaluation studies are completed in those sites.

In 2008 the Joint Action Forum approved an additional objective for APOC, namely "to develop the evidence base for when and where ivermectin treatment can be stopped", and provide guidance to countries on how to prepare for and evaluate cessation of treatment where feasible.[13] The APOC Secretariat using the Kriging method and the CSA Advisory Group on Elimination 2011 produced modelled maps predicting end game dates. The models suggest that by 2015 assuming recommended CDTI coverage are met, all APOC program countries can achieve control targets and with appropriate support, sustain control activities beyond 2015.

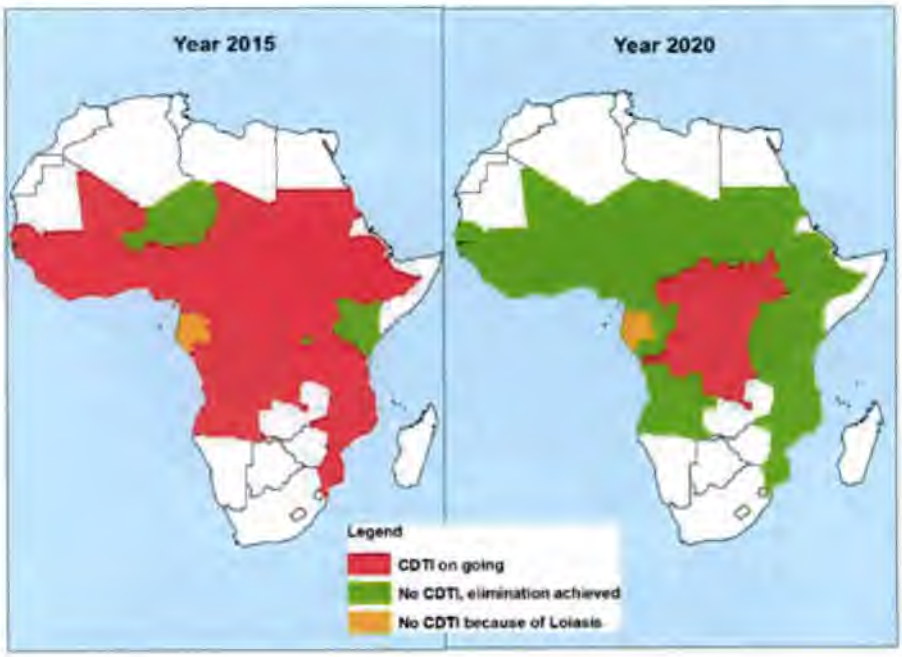
However, none of these countries will achieve elimination in 2015. When the modelling was extended to 2020, Angola, Burundi, Cameroon, Chad, Congo, Ethiopia, Malawi, Mozambique, Nigeria, Tanzania, and Uganda had a positive prospect of elimination as shown in **Figure 4**.

The new policy for onchocerciasis elimination is to extend treatment to hypo-endemic and the patches of areas where CDTI had not yet been initiated and for nodule prevalence over 5%. This brings the annual estimate of population to be covered under the onchocerciasis programme to approximately 113 million.[14] By end 2020, the total population at

[13] APOC 2008 Addendum for the plan of action and budget 2008-2015; Ouagadougou, APOC/WHO

[14] Report of the CSA Advisory Group on Elimination; September 2011

Figure 4. Country-level onchocerciasis elimination in African countries: projections for 2015 and 2020



(Source: The projections are based on those made by the CSA Advisory Group on Elimination, September 2011, completed by information received from countries during the national onchocerciasis programme coordinators' meeting, September 2012)

risk will be approximately 37 million mainly in Democratic Republic of the Congo, Central African Republic (CAR) and South Sudan. By 2025 it will be possible to have post treatment stoppage surveillance in Democratic Republic of the Congo project foci in Bandundu, Bas Congo, Katanga North and South, Lualaba and Ueles. CAR, Gabon and Equatorial Guinea will have started post-treatment stoppage surveillance but not yet confirmed elimination. South Sudan will be the only country with entire transmission zone still under assessment. This will significantly reduce to just under 20 million or approximately 8% of the at risk population at start of 2026. Detailed chart is attached as **Annex 2**.

Eliminating Lymphatic Filariasis

In limited geographic areas Lymphatic Filariasis MDA has reached 75% of the people living in an endemic district and 100% of endemic districts in seven countries in Africa. When other preventive measures are associated with MDA, such as vector control and the consistent use of bed nets, the number of years required for elimination of the infection may be reduced particularly in areas with low endemicity.[15]

By 2016 and with a scaled up effort in collaboration with other partners it is estimated that a total of 200 million people in 20 countries can be reached, escalating from 30 to 106 million people treated. LF MDA will have prevented the same number of new infections; saved about one million new born every year from infection and averted or arrested clinical progression of 600 000 cases of lymphedema/hydrocele. This however will result in only seven (7) out of forty (40) countries (Tanzania, specifically for Zanzibar, Comoros, Gabon, Gambia, Burkina Faso, Malawi and Ghana) being removed from the LF Africa endemic countries list by 2016.

Implementing the programme for another five to seven years will ensure that at least seventeen (17) additional affected countries can hit elimination and certified by 2025. With a focused plan working with other partners, two major and related intervention diseases – onchocerciasis and Lymphatic Filariasis will have seen elimination under the current plan of action in at least twenty countries.

2.3 Benefits to other NTDs and health systems

The technical competencies and tools developed for mapping the two diseases can be used to effectively support the mapping of other vector-borne and soil-transmitted diseases. In 2008 APOC conducted epidemiological integrated mapping of the NTDs, including training of surveyors and health technicians in Equatorial Guinea. REMO/REA, RAPLOA, ICT, urine filtration and Kato techniques were used for onchocerciasis, loiasis, Lymphatic Filariasis,Schistosomiasis and STH detection, respectively. Cross-sectional surveys were conducted in 90 villages, communities and schools, selected all over the country (10 in the Island and 80 in the Mainland). The work was co-financed by APOC, the Sabin Institute, Exxon Mobil and Liverpool Center for NTDs. In addition, APOC contributed to the integrated/ coordinated NTD mapping of selected NTDs in Angola, Cameroon, Chad, Congo, Democratic Republic of the Congo, Liberia and South Sudan.

Onchocerciasis and LF activities and surveys can also be used to assess the impact of bednets (coverage and

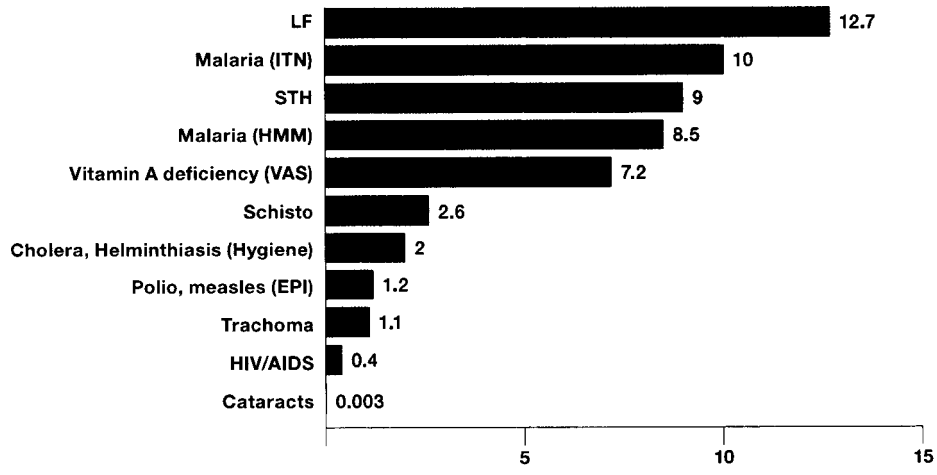
[15] WHO: Weekly Epidemiological Records, NO. 32, 5 August 2011, 341-351

usage) after two consecutive MDA and compared to the regular Malaria Roll Back or MICS coverage to ascertain the impact of community education and information. The drugs used to address the onchocerciasis and LF are potent and efficacious against a wide range of intestinal worm infections with the added benefits of reducing anaemia. The combination of MDA with preventive measures (distribution and promotion of use of bed nets) will contribute to infection control of vector-transmitted diseases, including malaria.

APOC and country partners have had considerable experience with co-implementation for surveys and use of the Community Directed Intervention (CDI) approach. **Figure 5** shows the programmes using the CDI platform for co-implementation and the population reached as of December 2010. The CDI structure provided entry point for other health interventions such as Vitamin A supplementation, child health and nutrition days, EPI, Polio and distribution of Insecticide Treated Nets (ITNs) for malaria.

The 2010 APOC Mid-term Evaluation report approved by JAF acknowledged that the CDI model holds strong promise for transforming national and community health systems. Ground realities require that the existing CDTI projects are restructured in order to fit country administrative context. However, a dedicated effort will be required to ensure that the CDTI projects remain strong and resilient to continue to carry the rest of the countries through at least another five years with minimal risk. The model has been systematically analysed and translated into a step-wise approach for training and establishing an effective and efficient health system and will remove the need for every partner attempting to establish their own delivery systems because country systems are weak. There are also on-going laboratory and human resource capacity building and researches into new technology, diagnostic and treatment innovations that have long term benefits to vector borne and other conditions. These include the DEC-patch test; OV 16, pheromone laced fly traps and macro filaricide against the adult onchocerciasis causing worm.

Figure 5. Health interventions delivered by APOC CDDs (in millions)



(Source: Weekly epidemiological Record, No. 48, 2011, 86, 541–556)

3. Policy Framework

3.1 Policy orientations

Three external evaluations have so far been undertaken on APOC. The 2000 evaluation found that APOC's CDTI Strategy was "a timely and innovative strategy for fighting a wide-spread scourge". The second, conducted in 2005, identified substantial achievement of APOC goals particularly in conflict and post conflict areas. The report also suggested, based on ONCHOSIM modelling, that elimination may be achievable in about 20 years. New orientations were provided to guide implementation of the plan.

1. In 2006 the Yaoundé Declaration of African Ministers of Health on Onchocerciasis Control expressed their commitment to pursue the elimination agenda across the region.
2. The decision to phase out APOC by 2015 was made following the adoption of the Phase II and Phasing-Out period – Plan of Action and Budget in 2007.
3. At the 57th Session of the WHO Regional Committee for Africa held in 2007 the Ministers of Health requested that APOC should move from a single disease to a multi-disease approach, which proposal was adopted by subsequent Joint Action Forum meetings.

The third external evaluation was conducted in 2010, and the report presented to the 16th session of the Joint Action Forum, signalled that closing APOC in 2015 may be pre-mature given the real possibility of elimination. The science was now better understood.[16,17] However, APOC cannot be business as usual and it was time for change. After careful deliberation JAF16 requested the Committee of Sponsoring Agencies (CSA) to interrogate the evidence and make recommendations on the future of APOC. Three CSA working groups were set up and their recommendations submitted to the 17th Session of the Joint Action Forum. JAF 17 endorsed a general way forward on the Future of APOC as follows:

- The onchocerciasis programme should not close in 2015 as that would be untimely, given that none of the 31 endemic countries would have achieved elimination by that date.
- The Programme should pursue the elimination of onchocerciasis in Africa including twice yearly treatment with ivermectin to speed up elimination in problematic areas.
- Support co-implementation of preventive chemotherapy interventions for other selected NTDs in the context of increased support to community-level health systems strengthening.
- The CSA and APOC management to submit a detailed new plan of action with costs reflecting the new expanded direction for the programme beyond 2015 for consideration by JAF 18.

The orientation provided a challenge that required APOC to reinvent itself to reflect and address the needs of the current rapidly changing NTD

[16] Diawara L, Traore´MO, Badji A, Bissan Y, Doumbia K, et al. (2009) Feasibility of Onchocerciasis Elimination with Ivermectin Treatment in Endemic Foci in Africa: First Evidence from Studies in Mali and Senegal. *PLoS Negl Trop Dis* 3(7): e497. doi:10.1371/journal.pntd.0000497

[17] Traore MO, Sarr MD, Badji A, Bissan Y, Diawara L, et al. (2012) Proof-of-Principle of Onchocerciasis Elimination with Ivermectin Treatment in Endemic Foci in Africa: Final Results of a Study in Mali and Senegal. *PLoS Negl Trop Dis* 6(9): e1825. doi:10.1371/journal.pntd.0001825

environment while remaining relevant to countries in the ten years after its current mandate (beyond 2015).

3.2 Focus from 2016-2025

Based on the decision of the JAF, APOC will focus on Onchocerciasis elimination and particularly support Lymphatic Filariasis elimination. The programme will also contribute to the control of Schistosomiasis, trachoma and STH; develop capacity of countries to establish and operate robust and resilient surveillance and community health systems, and exit in 2025. A new name will be adopted to reflect the shift in focus.

3.3 Objectives for the period from 2016–2025

In line with the policy orientations provided by JAF 17, APOC will aim at achieving the following objectives:

1. Eliminate Onchocerciasis in 80% of endemic countries in Africa by 2025.
2. Collaborate with relevant programmes and partners to implement community-directed interventions to control/eliminate selected PCT-NTDs in all onchocerciasis endemic countries in Africa.
3. Collaborate with relevant programmes and partners to strengthen community health systems in all onchocerciasis endemic countries in Africa.

3.4 Guiding principles

The following guiding principles underpin APOC's Strategic Plan for the period 2016–2025:

- **Community ownership and empowerment:** This focuses on the CDTI process which holds the key to attaining elimination and hinges on communities directing and managing the intervention process.
- **Country leadership and programme integration:** With the focus on elimination and co-implementation, countries will take leadership in formulating policies and integrated NTDs strategies.
- **Intensification and acceleration of operations:** Countries and partners will prioritise and intensify interventions for elimination of onchocerciasis and other targeted NTDs.
- **Evidence-based decision making:** Decision making at every level of responsibility will be based on evidence including where to intensify treatment activities, introduction of new technology and when and where to stop treatment. These will go along with operational research to increase efficient delivery of programmes.
- **Independent evaluation:** External independent evaluations and the opinion of external experts and the Technical Consultative Committee will continue to inform the decisions of the Committee of Sponsoring Agencies and the Joint Action Forum. At field level independent evaluations will be regularly undertaken to assess progress and timely implement corrective measures where needed.
- **Partnership for implementation and governance:** The enduring APOC partnership celebrated as an important element for the success of the Programme will continue to retain all its elements at the community, national and international level. In addition, it will work with other NTD stakeholders.
- **Gender sensitivity:** The programme will ensure gender is mainstreamed in all its activities.

4. Plan of action

The plan of action translates the objectives stated above into activities and tasks to deliver the outputs and outcomes estimated in the business case.

OBJECTIVE 1

Eliminate Onchocerciasis in 80% of endemic countries in Africa by 2025

One of the the focus of this objective is to sustain the momentum and keep all stakeholders at country level informed and committed to the goal and urgency of elimination. For all countries, appropriate onchocerciasis and LF elimination strategies integrated into an NTD strategic plan will be developed. The programmes will recognise the strengths and weaknesses of country CDIs. Thorough assessment of the cost implications and the commitment of the government towards elimination will be secured. The emphasis is on country-led approaches with the harmonisation and alignment of all NTD programmes and activities. The planned activities should aim at achieving and sustaining 100% geographic coverage and at least 80% therapeutic coverage levels in all onchocerciasis transmission zones.

The other focus will be on surveillance systems strengthening. There will be need for entomological and epidemiological assessment with collaboration from competent laboratories supervised and supported by the rebranded APOC experts and consultants to avoid the risk of wrong endpoint decision making. The repositioned APOC will develop guidelines in collaboration with partners and train in-country programme managers, disease control and surveillance officers and resource persons from universities, agricultural extension worker agencies, research institutions, and community partners in onchocerciasis epidemiological and entomological evaluation techniques. Country disease control officers will also be trained to perform evaluation activities.

As APOC will operate for ten (10) years and shut down, a number of liquidating activities will be performed and this will begin early to ensure a smooth transition. Those activities relate to the work of closure committees, final evaluation reports, final financial audit, personnel liabilities and legal costs, transfer of premises, title deeds and its associated legal costs, equipment, vehicles, and other chattels inventory and disposal process fees and bank closure. In 2022, the CSA will constitute into an APOC closure standing committee. It will develop a closure plan with the support of a consultant and APOC management and will make "Progress towards APOC closure" a permanent item on the JAF agenda annually from that date.

ACTIVITY 1
Raise profile and advocate resources for onchocerciasis and Lymphatic Filariasis elimination and other selected NTDs activities in countries

Implementing the programme for another 10 years will require sustained awareness creation and maintaining the momentum. It is imperative that strong advocacy be undertaken within countries and globally to make oncho elimination and NTDs control a priority agenda of governments' resource allocation and financing. APOC in collaboration with WHO/AFRO, NGOs and Civil Society Organisations (CSOs) will act as a facilitator for this drive.

Main tasks

- Develop advocacy materials targeted at policy and legislative decision makers to promote policies and public health regulations that enforce service provision activities and budgets aimed at eliminating LF and other targeted NTDs and use these materials in opportunities offered by NTD global forums.
- In collaboration with WHO/AFRO monitor the implementation by countries of the Yaoundé declaration[18] of 2006 towards increasing the proportion of the total health expenditure on health allocated to NTDs; and produce progress reports for the attention of the WHO Regional Committee for Africa sessions.
- Support in-country dialogue between the Ministries of Finance, Foreign Affairs and Health and donors to include progress in achieving NTD targets in their health assessment indicators and other requirements for funding health programmes.
- Where feasible, advocate for private sector involvement in financing NTD programmes as part of their corporate responsibility towards the communities they work in.

ACTIVITY 2
Support integrated NTD policy and strategy development in endemic countries

Given the new developments and the need to expand coverage, all countries will be required to develop and regularly revise policies and strategies for onchocerciasis elimination as part of an integrated NTD policy and strategy. This will be based on system-wide approach reflecting all inputs and work of various partners with increased emphasis on harmonised activities and integrated disease control, adoption of innovations and effective community engagement.

Main tasks

- In collaboration with WHO-AFRO, support countries to revise national NTD strategic plans and financing requirements incorporating evidence from mapping and country needs assessments towards elimination. For onchocerciasis, this will include implementing alternative approaches where determined to be necessary.
- Support the integration of the strategic plans into annual plans of action that can be incorporated into national budgets and for use as resource mobilisation tools.
- Support the integration of NOTFs into national systems and activities for the effective management of programmes including supervision and monitoring.

[18] Declaration of African Ministers of Health participating in the Special Summit of Partners of the African Programme for Onchocerciasis Control (APOC) held in Yaoundé, Cameroon, from 26-27 September 2006 to discuss the future of river blindness (onchocerciasis) in Africa.

- Support countries to develop systems for effective monitoring, evaluation and reporting.

While integrated policy and strategy development is desirable, the focus on onchocerciasis elimination will be retained to ensure that weaknesses in other NTD programmes will not derail achieving onchocerciasis elimination.

ACTIVITY 3
Build capacity for the delivery of Community Directed Interventions (CDI) in all onchocerciasis and Lymphatic Filariasis transmission zones

Capacity building will be essential in ensuring that skills are continually upgraded and matched to the emerging needs. Emphasis will be placed on the training of community health workers and volunteers as well as health workers at the district and health facility levels including management of adverse effects of treatment for targeted NTDs. Given the known situation of high staff turnover a larger pool of staff will continue to be trained.

Main tasks

- Provide structured training for health professionals in collaboration with locally accredited institutions based on updated CDI training manuals.
- Support selection and training of polyvalent Community Directed Distributors (CDDs) using CDI manual to meet increased emphasis on scaling up activities and integrated NTD service delivery.
- Provide focused training for supervisors and trainers in countries to enhance their support activities to field workers. This will cover government and NGDO personnel involved in CDI management and programme delivery including information management.
- Provide technical support to collaborating training institutions to integrate CDI in their curriculum and train health professionals at the post-graduate level in Community Health Systems Strengthening based on the APOC experience and support the training of two professionals each from Angola, Mozambique, Democratic Republic of the Congo, Central African Republic, Sierra Leone, Gabon and South Sudan.
- Create technical capacity through the recruitment of community health systems experts, financial and relevant personnel for Angola, Democratic Republic of the Congo, Central African Republic, Sierra Leone and South Sudan till 2020.

ACTIVITY 4
Provide logistic support to countries and communities to undertake effective CDTI activities

It is anticipated that all CDTI activities will be undertaken with the support of APOC to ensure that resource limitations do not interfere with the positive trajectory towards elimination. The focus however will be to complement governments and development partners' efforts rather than absorb governments of their responsibilities. In 2011 logistics and equipment were provided to 14 APOC and 6 former OCP countries, including vehicles, bicycles and motorcycles. By 2016 these will all have aged and reached replacement point.

Main tasks

- Provide vehicles with PA systems, motorcycles, bicycles, boots, rain gear, torch lights, batteries and generators to project districts and communities.

All vehicles, motorcycles and bicycles above five years will be replaced. Other equipment and logistics will be provided on a biennial basis.

- Develop communication support materials to reinforce health education, sensitisation, advocacy and mobilisation (HSAM) activities including support to communities to undertake community mobilisation and sensitisation activities for targeted NTDs.
- Provide Information Communication and Technology support including computers and simple mobile phones to facilitate quick and reliable community level data capture, transmission and processing.

ACTIVITY 5
Undertake programme monitoring and evaluation activities

CDTI projects are evaluated by (i) an independent participatory monitoring exercise; (ii) an annual internal self-monitoring exercise and; (iii) evaluation for systems viability. Every active CDI project will undergo the full cycle at least once every two years. This will be extended to cover LF projects. All projects will undergo intensive mid-term evaluation in the fifth year of implementation of this Plan of Action and Budget.

Main tasks

- Review existing and, if required, develop new monitoring and evaluation tools and guidelines for undertaking CDI monitoring and systems viability evaluations.
- Support country programmes to undertake annual monitoring of all CDI programmes and systems evaluation in the country once every two years.
- Undertake data quality assessments of country registers and reporting of therapeutic and geographic coverage annually and provide technical assistance where capacity is weak in keeping community registers.
- Support cross border activities including meetings to harmonise efforts and assess the effectiveness and progress in geographic and therapeutic coverage. These issues will be discussed at the sub-regional Ministerial meetings organized by the Regional Economic Communities.

ACTIVITY 6
Manage elimination process

Within NTDs control and elimination frameworks, APOC will develop formal mechanisms of engagement with countries and provide technical backstopping to ensure commitment to the goal of onchocerciasis elimination and health systems strengthening at community level and provide the needed evidence and tools for implementation.

Main tasks

- Revise the existing APOC agreement with countries to ensure it is consistent with onchocerciasis elimination goal.
- Manage the continuing mapping of onchocerciasis and PCT-NTDs in all endemic countries to determine prevalence levels and develop regional scenarios for transmission zones and country classification.
- Update guidelines for safely stopping ivermectin mass distribution and formulating country exit strategies at the end of the programme.
- Provide suitable estimates of breakpoints of transmission with the different indicators of infection and transmission (e.g. mf prevalence,

CMFL, DEC patch test, OV16, or outcomes of PCR based screening of pools of flies).

- Collaborate with research institutions in the development of innovative diagnostic, treatment and surveillance tools, methods and techniques.
- Support operational research to address questions remaining on:
  i. feasibility of elimination in different ecological zones;
  ii. validation of post-surveillance activities and period in different epidemiological settings;
  ii. the effect of treatment in hyper-endemic areas on untreated low-endemic areas in river basins;
  iii. response to treatment and analysis of long term effect of mass ivermectin treatment;
  iv. Confirmation of speed of recrudescence in case of failure to achieve elimination and determine the cost effective approaches for post elimination surveillance;
  v. Design and changes required for co-implementation programmes;
  vi. Publish research results in scientific journals and APOC publications;
  vii. Undertake supportive monitoring and supervision visits to all endemic countries to provide technical advice and leverage partnerships at the country level.

ACTIVITY 7
Support strengthening of country level integrated disease surveillance systems

The focus of strengthening country level capacity for monitoring and surveillance incorporates the need to (i) systematically transfer monitoring and surveillance capacities to countries and (ii) integrating onchocerciasis monitoring and surveillance into national integrated disease surveillance systems. This will form part of APOC's contribution towards health systems strengthening.

Main tasks

- Develop and disseminate guidelines on onchocerciasis surveillance activities and processes and provide in-service and practical training.
- Establish sentinel sites and strengthen country specific disease control and surveillance systems including provision of laboratory equipment to ten collaborating laboratories.
- Organize training for two health information managers per country in the use of computer simulation models to map and predict progress in NTD control and elimination.
- Provide short and long term fellowship to train two professionals each from Angola, Mozambique, Democratic Republic of the Congo, Central African Republic, Sierra Leone, Gabon and South Sudan in integrated NTD surveillance and monitoring till 2020.
- Provide technical support to Angola, Mozambique, Democratic Republic of the Congo, Central African Republic, Sierra Leone, Gabon and South Sudan to support integrated NTD surveillance and elimination activities till 2020.

ACTIVITY 8

Undertake epidemiological and entomological evaluation for onchocerciasis

Epidemiological and entomological evaluation of endemicity levels in all transmission zones will be conducted to determine if the breakpoint has been reached and communities are sensitized prior to stopping treatment.

Main tasks

- Support countries to develop a country framework for epidemiological and entomological evaluations that reflect the country specific situation.
- Support countries to plan and implement entomological and epidemiological evaluation and map out country specific progress including updating of transmission zones and the trend towards breakpoint.
- Provide countries with logistics to conduct epidemiological and entomological evaluations (Skin snip punches, microscopes, or any other evaluation/surveillance tools, sterilizer, DEC patch test, OV 16, PCR based screening of pools of flies, etc).
- Model onchocerciasis transmission breakpoints .
- Support countries to establish elimination advisory committees to work with country partners to carefully assess the various parameters of analysis identified and confirm that breakpoint prior to stopping treatment has been reached.

ACTIVITY 9

Undertake post treatment stoppage surveillance to confirm elimination

The final processes for confirming elimination require rigorous monitoring and surveillance activities for three years after treatment has stopped. These will be paced carefully to avoid inconvenience to the target population and managing the national process while re-enforcing the systems strengthening activities within countries.

Main tasks

- Support countries to perform annual surveillance activities to carefully assess the various parameters of analysis and confirm that elimination has been reached.
- Support the preparation of independent reports and manage the processes for declaring elimination of the disease; this will include facilitating the meeting of the technical committee responsible for approving elimination status.
- Support safe exist of the programme from each country by ensuring that guidelines exist that inform all stakeholders of their post elimination responsibilities and support mechanisms available to them.

ACTIVITY 10

Contribute to the setting up and maintenance of a WHO African NTD information repository and management system at country and regional level

Over the years WHO/AFRO NTD and APOC will convert all of the available NTD samples library materials and generated reports into a digital library and make this available on line. This will include all evidence generated

based on analysis made by African and international laboratories and scientists in the targeted NTD areas so they may be easily accessible globally through a hub such as the African Health Observatory where each country system will be linked to a central repository. This will promote research and advance knowledge and innovation.

Main tasks

In collaboration with WHO/AFRO:

- Review and map existing NTD information system on Africa including technology, management, human resource and institutional arrangements.
- Convert the over 40 years onchocerciasis data from OCP and APOC into digital form.
- Update NTD integrated data management tools as necessary for a web-based repository.
- Support the establishment or strengthening of country level decentralised database management system for past and newly generated evidence and reports.
- Strengthen the capacity of country NTD health professionals in the use of statistical and spatial analysis software, the management and analysis of data as well as the interpretation of results and publish a semi-annual bulletin.
- Organize country specific mid-term evaluation of programmes and develop a 'State of Onchocerciasis Elimination in Africa: Mid-Term Progress Report' for consideration of JAF in 2021.

ACTIVITY 11
Manage the personnel, records, estates and transport systems of APOC

An effective personnel and administration correspondence and filing system will be retained in-house. The management and maintenance of estates and the transport systems including the management of international travels will also form an essential part of the organisational system. Generally most of the services will be outsourced and overseen by permanent staff.

Main tasks

- Engage a competent travel and tours agency to manage all international travel and airport reception protocols on behalf of the organisation.
- Contract out the facility cleaning and ground work services to a competent cleaning agency.
- Undertake maintenance and refurbishing of the office building and its surroundings.
- Manage APOC personnel, the official correspondence and flow and the filling systems of the organisation to ensure accuracy, maintenance of standards and professionalism.
- Engage a competent organisation or staff to provide courier services for within country communication.

ACTIVITY 12
Provide inputs for the effective running of APOC

The organisation will be incurring running cost to be able to function effectively over the period. This will include basic travels for international conferences that emerge as essential for advancing the work of APOC and office consumables.

Main tasks

- Purchase office consumables such as stationery, pen drives, staplers and pins, value books, pins among others.
- Maintain or replace broken or worn out furniture, safes, cabinets and other storage equipments for the office.
- Maintain or replace obsolete equipment such as air conditioners, fridges, computers, printers, fans.
- Support field trips, international conferences and seminars attended by personnel of the organisation.
- Hire, run, undertake maintenance or replace existing vehicles of the organisation. The organisation shall at all times own not more than one motorcycle, two four wheel drive vehicles and two saloon cars and shall replace the motorcycle, one four wheel and one saloon care once during the project lifetime. The rest shall be hired on as required basis.
- Pay for utilities including electricity, water, telephones, internet connectivity and other data management and hosting service providers.

ACTIVITY 13
Manage the Information Communication and Technology systems

Information technology will be used widely within the organisation to limit paper use, encourage instant access to information and data processing, and to ensure reliability of work flow confidentiality and communication between the countries, collaborating partners and the organisation.

Main tasks

- Develop standards for and manage all the information technology equipments and software of APOC to ensure a versatile uninterrupted services and workflow.
- Purchase and maintain ICT equipment including telephones, computers, printers, projectors and their accessories.
- Support the deployment of software packages developed or introduced by APOC as part of systems strengthening in countries.
- Develop and maintain an APOC webpage and other social media sites including Facebook, Twitter and similar sites.
- Establish and manage an Africa NTD and Community Health Systems Repository for five years in collaboration with WHO/AFRO.
- Identify and work with one School of Public Health or research institution to become an NTD and community health systems Centre of Excellence in Africa and transfer the repository to it. This will be chosen from the institutions strengthened for laboratory and training identified earlier.

ACTIVITY 14
Effectively manage and account for all APOC resources

All resources received, disbursed and expended have to be properly accounted for. In the same way every country accounting systems needs to be robust and efficient enough to gain development partner and national government confidence to want to channel resources and supplies through the recipient institution over the long period.

Main tasks

- Maintain an efficient accounting, banking, treasury and auditing system, receive and properly account for all resources received and spent by APOC, according to WHO procedures.
- Recruit, post and manage qualified accountants in endemic countries till 2020 to support and build capacity of accounting personnel to manage resources until certified Budget Management Centres (BMC) are developed.
- Manage the personnel and reward system of APOC linked to the WHO system.

ACTIVITY 15
Establish efficient working mechanism for oversight, advocacy and resource mobilisation

APOC partnership structure continues to work well. The system will be retained including its representative nature which provides for the effective and equal participation of countries and sponsors except that other NTD coordinating bodies will now be invited to participate in the Technical Coordinating Committee meetings and provided observer status on the other bodies. All existing arrangements for the funding of meetings and attendance by all participants will also be maintained. The fund management arrangement as reviewed before the commencement of the repositioned APOC will apply.

Main tasks

- Develop technical papers and support the organisation of Technical Coordinating Council meetings.
- Develop or commission technical reports and support the organisation of CSA meetings.
- Develop or commission technical reports and support the organisation of JAF meetings.
- Support advocacy and resource mobilisation activities of governance members including hosting, reception and media events.
- Support the conduct of CSA and JAF commissioned reviews and mid-term evaluation reports.
- Recruit an Executive Director and office manager to manage the corporate affairs, technical professionals and operations of APOC.

ACTIVITY 16
Transfer residual responsibilities

At the end of 2025 Central Africa Republic, Democratic Republic of the Congo and South Sudan are unlikely to fully reach oncho and LF elimination. However specific foci will have attained elimination even within these countries. The expectation is that no more than ten (10) foci sites will have remained live. The difficulties in relation to loiasis based on current technology also make this imperative. For these countries the technical functions will need to be sustained in one or multiple agencies so as to provide programme stewardship. APOC will secure commitments for the following roles and responsibilities which remain relevant:

Main tasks

In collaboration with WHO/AFRO:

- Work with country experts to ensure each of the countries has an updated map on NTDs indicating likely breakpoints where feasible by 2023.
- Work with partners to ensure that each country has an updated NTD Financial Sustainability and Systems Strengthening Plan and Programme of Work starting 2023. The period

should allow for adequate time to address all country needs.

- Support UN agencies, NGDOs and development partners working in the Central Africa Republic, Democratic Republic of the Congo and South Sudan and any other countries falling behind due to unforeseen reasons to develop a memorandum of understanding with government to commit to financing NTD control and elimination activities beyond 2025.
- Secure a WHO Regional Committee for Africa resolution calling for the continuing monitoring and reporting on the targeted NTDs.

ACTIVITY 17
Undertake audit, inventory and disposal of chattels and estate

To ensure a smooth transition, only encumbered expenditures made in 2024 may be paid by end of March 2025. No new programme expenditures will be made in 2025.

Main tasks

- The CSA on the direction of the JAF will, starting from 2023, commission a final audit of APOC accounts in all countries and culminating at the Regional level to be completed by March 2025, in accordance with WHO procedures.
- Make an inventory of all office equipment, vehicles, estate infrastructure and unused office consumables and donate all vehicles, office equipment below five years and unused office consumable to an institution to be approved by CSA. All donations should be completed by March 2025.
- Engage a scrap dealing institution to scrap all unserviceable vehicles and equipments and dispose of them safely by March 2025.

ACTIVITY 18
Transfer estates and hold closing down CSA and JAF meetings

Main tasks

- Engage a legal consultant to manage the transfer of deeds of agreement covering all that estate which is occupied by APOC to the WHO Country Office or another suitable recipient entity.
- Organise a Joint CSA and Technical Coordinating Council (TCC) Meeting to evaluate the final report and provide orientations for countries and partners to assume responsibility by July 2025.
- Collaborate with WHO AFRO to prepare a "State of onchocerciasis in Africa Report" to be presented at the WHO Regional Committee for Africa and announce imminent closure.
- Hold a Final CSA meeting in July 2025 and a final JAF meeting in November 2025 where JAF will adopt the final technical and financial report and announce closure. It will provide guidance concerning the new roles and responsibilities post-APOC.
- Transfer all the library and repository to the collaborating training or research institution in Africa based on a memorandum of understanding and in collaboration with WHO and partners declare the institute as a WHO collaborating centre an "NTD centre of excellence and Repository " in Africa.
- Appoint a consultant to work directly with an APOC team, in accordance with WHO procedures, to submit a final financial and auditor's report to the World Bank and World Health Organization by end March 2026.

OBJECTIVE 2

Collaborate with relevant programmes and partners to implement community-directed interventions to control/eliminate selected PCT-NTDs in all onchocerciasis endemic countries in Africa

Co-implementation with other diseases particularly PCT-based NTDs is a natural progression from the successes the onchocerciasis control and Lymphatic Filariasis programmes have achieved. Lymphatic Filariasis, Schistosomiasis, STH and Trachoma are the PCT-based NTDs that work with the CDI platform and can support each other with epidemiological mapping and analysis, drug distribution and system intervention. The programme will include all 31 oncho endemic countries with specific focus on countries in need.

APOC will collaborate with WHO/AFRO to engage the various constituents at the country, regional and global level to develop a harmonised approach to addressing the targeted NTDs and offer its competences to support elimination and control activities. The activity will link and liaise any new activity for integrated NTD control within the new resources made available to countries directly. Within this objective National MDAs and material such as ITN and Vitamin A distribution will be enabled. For some countries the provision of funds may cover the total cost of mapping and surveys while resources to other activities vary between 10-100% of total costs.

ACTIVITY 1
Raise profile and advocate resources for co-implementation activities in countries

It is imperative that strong advocacy be undertaken within countries and globally to make co-implementation of NTDs a priority agenda of governments' resource allocation and financing. APOC, in collaboration with WHO/AFRO, NGOs and CSOs will act as a facilitator for this drive.

Main tasks

- Develop partnerships with global and regional disease specific NTD coordinating bodies and forums to mobilise resources and advocate to attaining elimination and control targets.
- Contribute to the development, deployment and application of tools for integration planning in budgeting for co-implementation and reporting of results.

ACTIVITY 2
Support the integrated mapping of selected PCT-NTDs

Currently, the mapping of Onchocerciasis, LF, Schistosomiasis and STH has been completed in Equatorial Guinea and Liberia with APOC support. All areas suspected to be at risk of *Loa loa* were mapped including non-APOC participating countries. APOC in collaboration with WHO/AFRO is working with countries to finalise plans to support all onchocerciasis

and LF endemic countries co-endemic with other diseases to complete the integrated mapping of the NTDs. Assist in completion of mapping of Schistosomiasis, STH and Trachoma in all endemic areas targeted for Onchocerciasis and LF elimination will be done through skills training of national officers.

Main tasks

- Support the assessment of the burden of Loiasis, Schistosomiasis, STH and Trachoma and produce an African and country by country map on progress; delineating or updating transmission zones where appropriate. Two groups of countries will be targeted.
- The first group of countries to be targeted are those endemic with LF, Loa Loa and other NTDs just about to begin or in various stages of maturity of the national programmes but with the highest burden of disease in Africa. The countries likely to be included in this category are Burkina Faso, Nigeria, Cote d'Ivoire, Liberia, South Sudan, Sierra Leone, Democratic Republic of the Congo, Malawi.
    i. APOC will develop or update feasibility studies and maps and undertake assessment of impact of previous NTD interventions. It will support the national programme to plan and complete MDA.
    ii. Provide TA for Transmission Assessment Surveys and budget support in coordination with other partners, avoid duplication and achieve efficiency in planning and implementation. This group estimated to constitute 50% of the programme.
- The second group of countries are those with potential of scaling up interventions but are yet to attain strong control systems in all or some of the target NTDs. The countries which include Comoros, Tanzania, Ghana, Gabon, Gambia, Burkina Faso, Malawi are likely to have a number of support agencies working or just completed ceased work on them. They may have completed mapping and have national programmes in place but without the required level of capacity or funds to move towards updating and full scale national MDA and hence achieve control targets required.
    i. Engagement with these countries will start in the first year of the programme. APOC will provide capacity building, technical, implementation and budgetary assistance to scale up activities.
    ii. Undertake operational research and bottleneck analysis on challenges to attaining control and elimination goals, provide technical and programme management advice and weaned countries in this category off by 2020.
- Organize planning workshops to harmonise and align policies, planning, supply chain management and service delivery activities to promote co-implementation. Where possible undertake joint development of communication support materials for HSAM
- Directly support co-implementation of activities in fifteen (15) countries ending 2020.

ACTIVITY 3

Contribute to capacity-building for integrated PCT-NTD management within Africa

A fundamental problem plaguing all countries is adequate institutional, management and human resource capacity to address the complexity of the changing NTD environment and elimination protocols. This requires a complex network of different technologies and data systems. APOC will support the development of need-based professionals and technical capacities oriented to meet the demands of NTD elimination and control.

Main Tasks

- Contribute to the development of a structured district and community integrated NTD programme management, surveillance and reporting in-service training programme and implement it in collaboration with country programmes.
- Support the training of six country participants in Public Health at masters and doctoral level .
- Provide national reference laboratories and at least 10 collaborating NTD centres of excellence with logistics, inputs and reagents to support NTD diagnostic, analysis and research activities.
- Collaborate with the regional health organizations and Non-Governmental Development Organisations in the development of health policies and advocacy work.

OBJECTIVE 3

Collaborate with relevant programmes and partners to strengthen community health systems in all onchocerciasis endemic countries in Africa

Weak health systems have been one of the main difficulties countries faced in attracting resources and executing interventions to achieve NTD elimination and control goals. Development partners willing to support countries are usually concerned about accountability systems to manage inputs and deliver services. APOC and development partners over the years have served as a proxy recipient by sometimes directly managing supplies and recruiting accounting and technical staff posted in countries to deliver service delivery. At the implementation level, APOC has achieved an enviable reputation of building Community Directed Interventions (CDI) that provides a platform for integrated community health care delivery and co-implementation. The framework provides a template that can be used to transform community health systems and enable countries build resilience for sustainability. This objective aims to translate and mainstream the experiences into permanent country systems.

ACTIVITY 1
Collaborate with country certified Budget Management Centres (BMC)

Under this activity APOC will support the building and establishment of sustainable accounting systems to enable development partners have confidence in providing NTD resources, adopt and use country led financial accounting and reporting systems. This will reduce the need for developing parallel reporting systems as a result of each partner requiring their own reporting systems to gain synergy, value for money and allow countries to be effective at funding interventions.

Main tasks

- Collaborate with an accounting consulting firm to undertake budgeting, budget management and accountability systems assessment to establish baseline capacity and technical support needs for country institutions that handle NTD funds.
- Support the implementation of guidelines for establishing strong accounting systems and an institutional assessment and certification criteria in participating countries.
- Contribute to the development of an NTD and systems costing tool (software) in collaboration with other partners, make it freely available and train at least a core of six professionals as trainers from each country on its use.

ACTIVITY 2
Promote CDI as a community health systems strengthening platform for PHC

Promoting community health systems is acknowledgement of the work CDDs are doing with programmes other than NTDs and the need to promote the principles of using established health systems for service delivery. The goal

is to contribute to the strengthening of the health system to deliver basic package of interventions beyond NTDs to communities in a sustainable manner.

Main tasks

- Collaborate with WHO/AFRO and development partners in the design and development of guidelines for Community Health Systems Strengthening and conduct structured training to implement the plan in the Africa region.
- Actively support the transformation of LF and oncho CDI programmes being weaned off into Community Health system strengthening (Comm-HSS) sites in countries as the programme contribution to Health System Strengthening (HSS) and Primary Health Care (PHC), while carefully documenting the process, implementation experiences and impact and disseminate widely.
- Support workshops aimed at the harmonisation of planning, budgeting and service delivery activities at the community level to promote systems strengthening.
- Sponsor other country health systems professionals to undertake cross country learning attachment in countries where CDIs have been transformed into Comm-HSS.

ACTIVITY 3
Contribute to strengthening the information management, monitoring and evaluation systems

Accurate reporting of health data is only as strong as the health information systems is strong at all levels and how those collecting the data regard the usefulness and ability to use the data. Evaluation also helps assess the effectiveness of the effort being deployed and provides an incentive to sustain and improve performance. APOC will contribute to building health information systems that facilitate control and elimination assessment while creating the platform for reporting on other health sector interventions.

Main tasks

- Develop a standard protocol for establishing a functional Health Information, Monitoring and Evaluation Unit. This should include software recommendation, equipment, basic staffing norm and information technology.
- Provide each country with computers software and accessories based on the protocol that enables countries revitalise their information management systems at the national level. Where country systems are extremely weak, countries will be encouraged to nominate a university or NGO to host the Unit for five years, conduct biennial training of trainers' workshops to equip a core of critical professionals and support them to conduct national training in countries on health information, monitoring and evaluation.
- Provide two fellowships each to countries to train health professionals in integrated disease health information management and reporting and supervision of CDDs reporting.
- Collaborate with country based research institutions and health workers to review country data and publish in scientific journals and produce policy briefs for countries.

ACTIVITY 4

Support comprehensive institutional development and training to benefit NTDs and health systems

This activity emphasizes the systems transformation at the country level focusing on the targeted NTDs being added to the existing onchocerciasis established national institutions and broaden the function of onchocerciasis country structures. It offers partners at the country level a common rallying point for joint action on specific interventions and a platform for common monitoring and evaluation of outputs and outcomes.

Main tasks

- Facilitate the transformation of onchocerciasis structures into Technical Review Committees (TRC) and provide financial support for operations in countries annually.
- Develop and manage a grant giving mechanism for Comm-HSS for NTDs and co-implementation.
- Support the re-launch of CDI in continuing projects and support training of Community Drug Distributors (CDDs) for effective co-implementation.
- Manage all fellowship programmes that have been initiated under the repositioned APOC.
- Initiate, coordinate and manage the structured training programme of essential health workers on managing integrated NTD programmes and co-implementation at all levels.
- Support country-focus and cross border NTD advocacy missions, meetings and workshops.
- Design, develop and provide HSAM materials for advocacy and education in endemic countries.

5. Specific deliverables by 2025

- All the onchocerciasis endemic countries will have been mapped and countries provided with updated onchocerciasis, Lymphatic Filariasis and Schistosomiasis maps including projected end dates for onchocerciasis and LF by 2020.
- All onchocerciasis endemic countries except Central African Republic, Democratic Republic of the Congo and South Sudan will be removed from the endemic country map by 2020.
- Additional 16 countries for LF will be removed from the respective diseases endemic country map by 2025.
- Capacities of seven NTD laboratories will have been revitalised, and integrated into a regional network that assure quality control and expertise in entomology dissection and PCR testing.
- Developed, disseminated and implemented a Health Systems Strengthening strategy based on the CDI model and curriculum integrated it into regular curricular in Public Health and Nursing Training Schools.
- Forty (40) health professionals will have received their masters or doctorates in an NTD and community health systems management field and jointly published at least 40 research papers.

6. Value for money and impact attribution

Through careful analysis and costing, a budget for the period has been produced. The total amount required is approximately US$ 151 800 000. This reflects the sliding scale used to graduate projects and countries off the programme once breakpoint and elimination has been achieved. The main areas of emphasis in the budget include the need to intensify activities in 20 countries with expanded focus for areas with prevalence rates of nodules above 5% for oncho to ensure that whole transmission areas are cleaned. In the elimination phase, surveillance activities increase to ensure that all parameters are carefully assessed to support evidence-based decision making.

Benefits of the LF and onchocerciasis programme in poverty reduction are directly related to the disability prevented by the medication. This includes the prevention as the full clinical manifestations in infected adults and days lost due to severe itching, fever, blindness and lymphadenitis which affect infected patients. The loss of productivity of infected people compared to healthy people is of 58%. Through mass drug administration of ivermectin or diethylcarbamazine citrate (DEC) together with albendazole (from GlaxoSmithKline) the Global Programme to Eliminate LF has treated almost 2 billion people over the past 8 years, thereby averting 32 million disability-adjusted life years, and at a

cost of only US$ 14-30 per DALY averted.[19] The active transmission of LF has also been interrupted in several countries. So far the number of DALYS averted by Onchocerciasis programme is estimated at 7.5 million as every infection averted constitutes a saving of 0.07 DALYS according to WHO and recent studies.[20]

APOC currently runs a much higher cost per DALY averted of approximately US$ 48.

By 2025 the repositioned APOC will have averted an estimated additional 6 million Disability Adjusted Life Years (DALYs) over the period as a result of onchocerciasis and an additional 4 million for Lymphatic Filariasis. Further, the 'off-target' effect of ivermectin and albendazole on other diseases may add another 1 million DALYs (13%). By 2025 an estimated total of eleven (11) million DALYs averted is anticipated.

This is approximately US$14 per DALY averted which is less than 34% of the cost so far incurred by APOC. This makes the new strategy proposed very cost effective and efficient in delivery of a much higher amount of services. The lower cost however should be seen as a result of the accumulated gains made over the years by the APOC programme and other partner interventions. This cost can be reduced immediately to half when extra benefits of other interventions co-implemented and systems strengthened are incorporated. It is estimated that by end 2025 this level of cost will be US$ 4.5. The current estimated value is favourable compared to crude calculations for control programmes on other NTDs, but will rapidly decline over the coming years, especially when elimination is achieved in countries.

To reach this stage billions of dollars in funds, time and efforts are being spent. The value of the donated products for NTDs is of the order of US$ 2-3 billion per year. Over the years this comes to about US$ 8-12 billion. It is estimated that the value of drugs within this package will be US$ 1.5-1.9 billion per year from Merck & Co., Inc., GSK and ESAI from 2013. For Mass Drug Administration service delivery, endemic countries bear a fair share of between 60-90% of the national programme costs.[21] APOC and partners had invested not less than US$ 3 billion to get to this stage. While it is important to secure these investments, it is also rewarding to be counted as being part of the success story achieved and progress being made with NTDs in Africa.

When medicines are factored in, the cost to sponsors of the initiative will be in the range of 0.16 cents per treatment, 0.40 to 0.80 cents per person treated should they receive two MDA rounds. This monetary contribution will be matched by the effort of the communities in country; bearing 60-90% of the actual costs of the treatment in terms of economic costs[22] and the provision of drugs by the pharmaceuticals company estimated at an annual value of circa US$ 1 billion.[23]

[19] Laxminarayan R, Mills AJ, Breman JG, Measham AR, Alleyne G, et al. (2006) Advancement of Global Health: Key Messages from the Disease Control Priorities Project. Lancet 367: 1193–208

[20] Lesong Conteh, Thomas Engels and David Molyneux: Socioeconomic aspects of neglected tropical diseases. Lancet 2010;375: 239-47

[21] Lesong Conteh, Thomas Engels and David Molyneux: Socioeconomic aspects of neglected tropical diseases. Lancet 2010;375: 239-47

[22] Ann S. Goldman et al: National Mass Drug Administration Costs for Lymphatic Filariasis Elimination. PLoS Neglected Tropical Diseases (www.plosntds.org). October 2007; Volume 1, Issue 1, e67.

[23] This includes the donation of 120 million tablets of DEC by Sanofi, Esai and Bill and Melinda Gates Foundation, 600 million tables of Albendazole by GSK and unlimited number of Invermectin by MSD (http://www.dfid.gov.uk/Documents. United to combat NTDs; table of commitments.

7. Monitoring and evaluation

The WHO guidelines will be used to assess and monitor programmes. The emphasis will be on measuring therapeutic and geographic coverage and bottlenecks to attaining elimination in both onchocerciasis and Lymphatic Filariasis programmes. This should help keep the countries and APOC firmly on the elimination agenda and trajectory. Data from accessment with country reports will provide an estimate of the numbers of people at risk treated. Value for money will be calculated, using a cost effectiveness analysis, the monetary cost of the programme related to its main outcome and the number of persons at risk treated, to establish the cost per person treated. In line with promoting equity, gender mainstreaming and the pro-poor considerations of the programme the gender mix and socio economic profile of beneficiaries will be assessed by obtaining gender and socio-economic disaggregated data.

8. Management

The repositioned APOC will operate an efficient Secretariat that will support the governing partnership which will be adopted for the programme. The programme will recruit consultants on a need basis to deliver on country programmes chosen in consultation with partners and the countries. The emphasis is to rapidly build the capacity of countries and collaborating agencies to gain the required expertise and institutional competency to take over and manage NTDs sustainably. Assets owning will also be minimal to ensure low overhead cost and lessen the burden of disposing of chattels at the imminent end of the programme in 2025.

9. Probable risks and mitigating measures

Treatment gaps and coverage failures

A gap of concern is the limited information on ex-OCP countries. For example, a survey conducted in 2008/2009 in Ghana observed a prevalence of 21.9% with a CMFL of 0.65mf/skin snip in Ekumdipe in the Daka river basin. The survey team also observed worrying prevalence rates found in the Pru river basin particularly at Dumanafo 14.4%, Damongo 9.3%, Jerusalem 12.4%, Bita Akura 11.2%, and Akrakuka 3.2%. The Ghana mapping also brought up the discovery of new Onchocericsis foci that have no access to Ivermectin. These are the Afram Plains district of the Eastern region, Ho municipal in the Volta region, and Amansie Central district in the Ashanti region. These districts have not officially been known to be endemic for onchocerciasis, and so, were not exposed to Ivermectin treatment. There are also concerns about the quality of data reported from some countries that can directly affect the models and prediction for stopping treatment dates.

APOC is putting in place an intensified programme to fully map out the transmission zones and rejuvenate and establish effective CDI programmes in these areas. Cross border activities will be intensified between Ghana and Togo and Ghana and Cote d'Ivoire. Sierra Leone is also being targeted for intensified intervention.

Recrudescence and possible resistance to ivermectin

Another challenge occuring on probably the blind side of everybody is the risk of transmission from hypo-endemic areas that fall between the cracks of active intervention leading to recrudecense. Community-directed treatment with ivermectin for onchocerciasis control is targeted by APOC policy for meso and hyper-endemic areas in Africa (nodule rates estimated by REMO at >20%). Below that threshold, communities were considered hypo-endemic and mass treatment was not recommended. As policy begins to shift from control to elimination, the role of hypo-endemic areas[24] in maintaining *Onchocerca volvulus* is being re-examined for all areas with nodule prevalence above 5 %. APOC will be mapping all areas to clearly delineate possible transmission zones. Currently there is emerging evidence though not yet conclusive about the possibility of resistance of *O. Volvulus* to ivermectin. If this is confirmed, it would undermine the Programmes ability to achieve elimination based entirely on mass treatment with ivermectin. The alternative is to quickly develop a drug that can act effectively on adult form of *Onchocerca volvulus*.

[24] Katabarwa et al. Does onchocerciasis transmission take place in hypoendemic areas? A study from the North Region of Cameroon. Journal of Tropical Medicine and International Health 2010; 15:645-52

Conflicts and strife

APOC is concerned about the consequences of conflicts and strife on programme implementation. Countries emerging from years of conflict could have coverage problems due to flints of war left behind that can rekindle. Technical officers will be recruited and posted in post-conflict countries to ensure they are adequately covered as and when it is safe to do so. Where needed, alternative approaches will be implemented in order to improve treatment coverage.

Severe adverse events

The severe adverse events which can occur in *Loa loa* infected persons constitutes another challenge and have led APOC to undertake rapid epidemiological assessment of *Loa loa* (using the RAPLOA method) in areas where community-directed treatment with ivermectin is indicated. RAPLOA has been conducted in 11 APOC participating countries. A total of 4798 villages were surveyed in Angola (222 villages), Cameroon (812), CAR (173), Chad (111), Congo (195), Democratic Republic of the Congo (2516), Equatorial Guinea (84), Ethiopia (28), Gabon (65), Nigeria (381) and South Sudan (211). Operational research will be undertaken to find appropriate strategies for the effective use of alternative treatment approaches. In the mean time, technical support will be provided to train health workers in the areas at risk of occurrence of SAEs on facility-based management of co-endemic patients.

Financing the programme

By 2015, APOC partners will have committed at least US$ 257 million towards onchocerciasis control and elimination efforts. Countries are showing good will towards budgeting and spending funds in support of onchocerciasis control. Data available suggests that the percentage of approved and disbursed funds has improved in recent years hitting 82% in 2009. By 2009 governments of participating countries have taken responsibility for coordination and management of national Onchocerciasis Programmes. Reported government financial contributions to CDTI core activities increased annually from 1.6 million US$ in 2008 to 2.3 million US$ in 2009 and to 3 million US$ in 2010. The overall proportion of expenditures of the partners (Governments and NGDOs) to CDTI core activities, equipment and salaries increased from more than 25% in 2008 to 30% (US$ 2 253 974 from governments and US$ 700 250 from NGDOs) in 2009 and almost 39% (US$ 3 428 331 from governments and US$ 3 012 750 from NGDOs) in 2010.

However another 10 year is likely to whittle down enthusiasm and many country NTD projects are already faced with difficulties in accessing funds, spending and accounting for the funds they receive both from APOC and from their own government budgets. Already NGDOs contributions decreased from US$ 700 250 in 2009 to US$ 415 581 in 2010. With the global economic recession and governments and development partners having fewer resources to spend, there are concerns that domestic funding sources may dry up all together and reverse the significant gains made. The reality is that as progress is made the per capita expenditure will be higher as effort to incidence costs gets

higher in trying to get the last victims cleared. The evidence will need to be robust if interest is to be sustained. In countries such as Burkina Faso, Ghana, Niger, Nigeria, Togo, and Uganda, where integrated efforts to control neglected tropical diseases are under way additional challenges may include temporary break in the supply chain management systems and weak local capacity.

Efforts will be pursued to increase government and NGDOs contributions above 25% of total cost for oncho elimination activities. The Executing Agency and the Fiscal Agent will develop a proactive resource mobilisation agenda in collaboration with NGDOs, development partners and civil society groups to mobilise adequate resources into the APOC Trust Fund during favourable times. It will secure commitments from governments to earmark and protect funds targeted for the elimination of onchocerciasis and other NTDs.

10. APOC estimated budget

OBJECTIVES	ACTIVITIES	2016-2020 (in US$)	2021-2025 (in US$)
4.1 Eliminate onchocerciasis in 80% of endemic countries	**ACTIVITY 1** Raise profile and advocate resources for onchocerciasis and LF elimination and other NTDs activities in countries	525,000	435,000
	ACTIVITY 2 Support integrated NTD policy and strategy development in co-endemic countries	535,000	30,000
	ACTIVITY 3 Build capacity for delivery of Community Directed Interventions (CDI) systems in all onchocerciasis and LF transmission zones	9,419,000	4,524,000
	ACTIVITY 4 Provide logistic support to countries and communities to undertake effective CDTI activities	4,540,000	2,895,000
	ACTIVITY 5 Undertake programme research, monitoring and evaluation activities	3,450,000	3,050,000
	ACTIVITY 6 Manage elimination process	8,770,700	5,830,700
	ACTIVITY 7 Support strengthening of country level integrated disease surveillance systems	5,952,000	2,710,000
	ACTIVITY 8 Undertake epidemiological and entomological surveillance for onchocerciasis and LF to determine breakpoint	6,850,000	3,850,000
	ACTIVITY 9 Undertake post treatment stoppage surveillance to confirm elimination	4,850,000	3,580,000

OBJECTIVES	ACTIVITIES	2016-2020 (in US$)	2021-2025 (in US$)
	ACTIVITY 10 Contribute to the setting up and maintenance of a WHO African NTD information repository and management system at country and regional level	2,195,000	2,040,000
	ACTIVITY 11 Manage the personnel, records, estates and transport systems of the organisation	1,774,000	1,624,000
	ACTIVITY 12 Provide inputs for the effective running of APOC	1,970,000	1,470,000
	ACTIVITY 13 Manage the Information Communication and Technology systems	763,000	663,000
	ACTIVITY 14 Effectively manage and account for all APOC resources	2,456,000	2,456,000
	ACTIVITY 15 Establish efficient working mechanism for oversight, advocacy and resource mobilisation	3,528,000	3,028,000
	ACTIVITY 16 Transfer residual responsibilities		920,000
	ACTIVITY 17 Undertake audit, inventory and disposal of chattels and estate		700,000
	ACTIVITY 18 Transfer estates and hold closing down CSA and JAF meetings		5,875,000
		57,577,700	**45,680,700**

OBJECTIVES	ACTIVITIES	2016-2020 (in US$)	2021-2025 (in US$)
4.2 Collaborate with relevant programmes and partners to implement community-directed interventions to control/ eliminate selected PCT-NTDs in all onchocerciasis endemic countries in Africa	**ACTIVITY 1** Raise profile and advocate resources for co-implementation activities in countries	2,074,000	1,624,000
	ACTIVITY 2 Support integrated mapping of LF and other PCT-NTD	8,500,000	2,880,000
	ACTIVITY 3 Contribute to capacity building for integrated LF and other PCT-NTD management within the region and in countries	5,116,000	3,458,000
		15,690,000	7,962,000
4.3 Collaborate with relevant programmes and partners to strengthen community health systems in all onchocerciasis endemic countries in Africa	**ACTIVITY 1** Collaborate with country certified Budget Management Centres (BMC)	2,724,000	1,624,000
	ACTIVITY 2 Promote CDI as a community health systems strengthening platform for PHC	3,872,000	2,598,000
	ACTIVITY 3 Contribute to strengthening the information management, monitoring and evaluation systems	2,364,700	500,000
	ACTIVITY 4 Support comprehensive institutional development and training to benefit NTDs and health systems	6,128,000	5,082,000
		15,088,700	9,804,000
		88,356,400	63,446,700
	GRAND TOTAL	**US$ 151,803,100**	

Figure 6. Budgetary allocation by period (in US$)

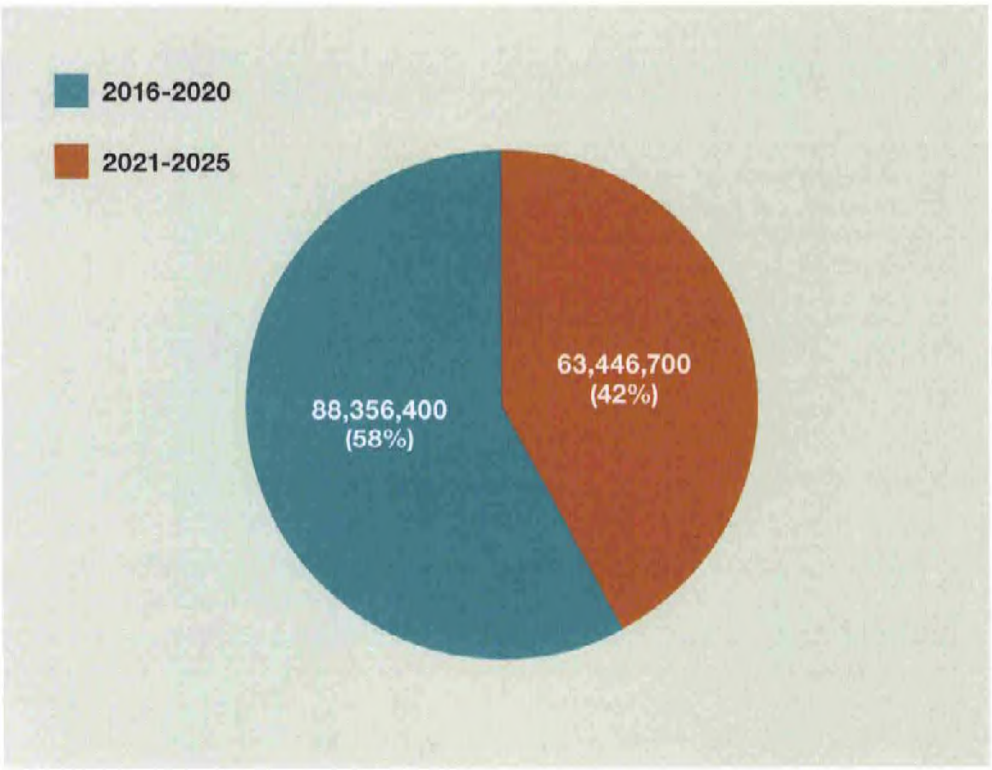


Figure 7. Budgetary allocation by objective 2016-2020 (in US$)

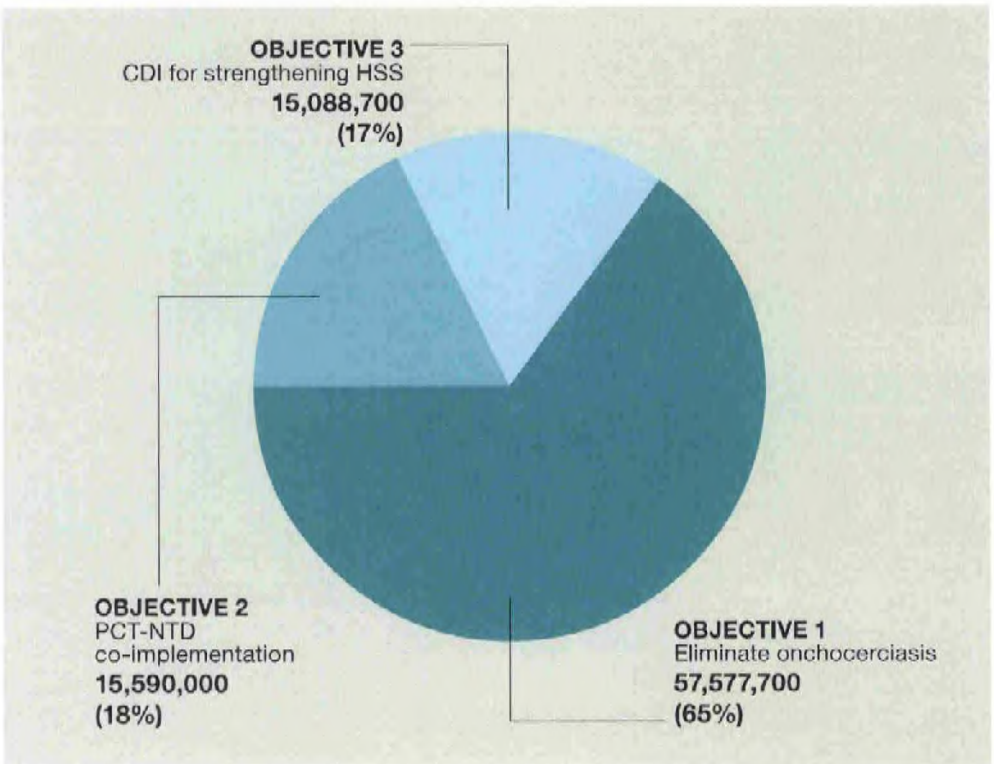


Figure 8. Budgetary allocation by objective 2021-2025 (in US$)

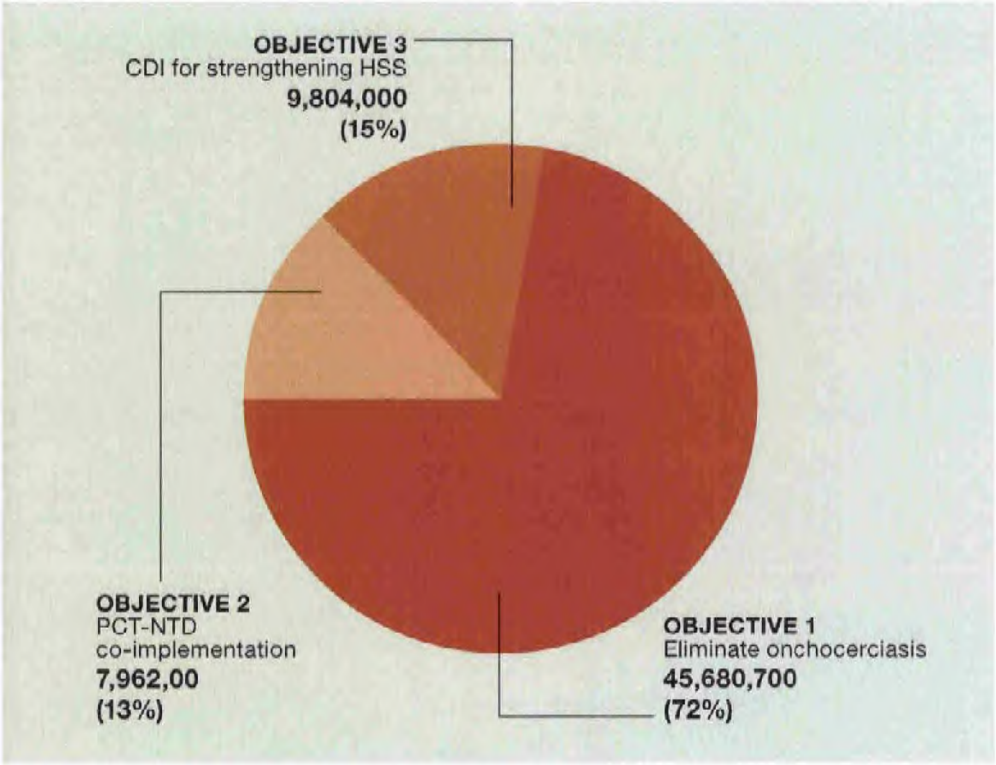
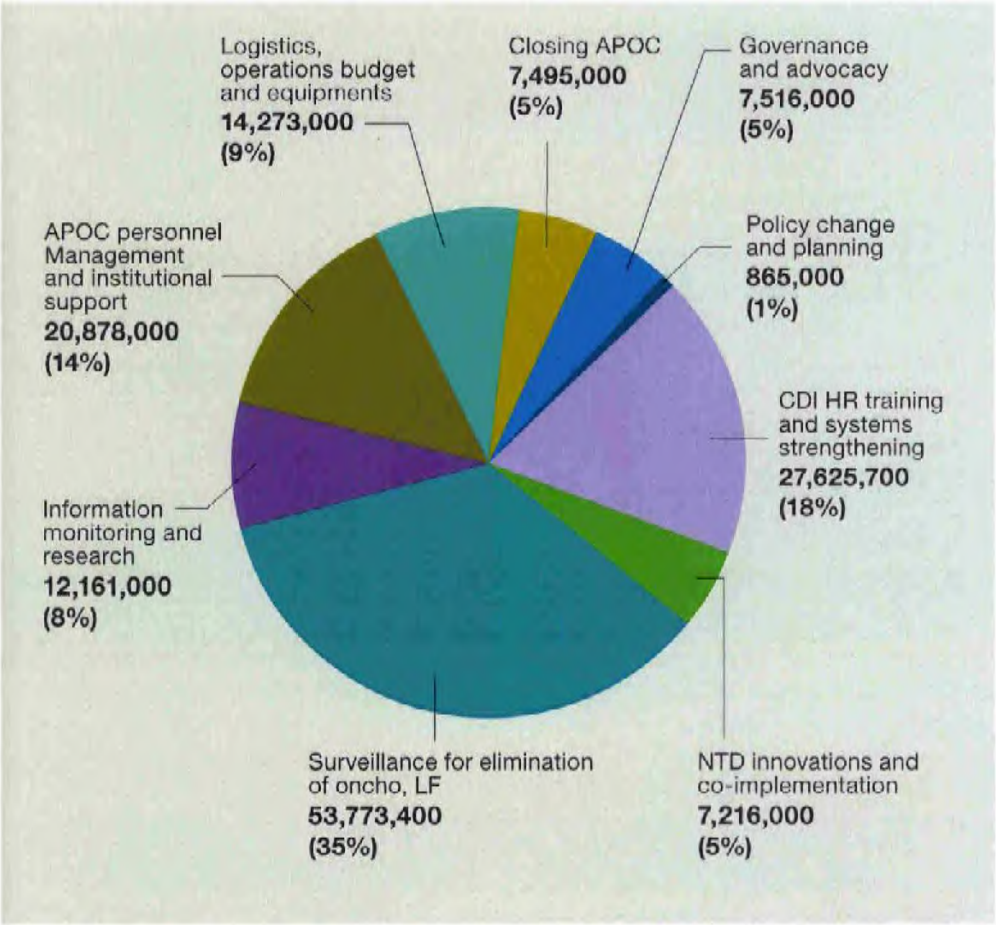


Figure 9. Functional area analysis (in US$)



11. Log frame on objectives and critical success indicators

Expected results	Verifiable indicator		Means of verification	Assumptions
	2020	2025		
OBJECTIVE: Eliminate onchocerciasis in 80% of endemic countries				
Political commitments secured and policies and action plans implemented	% of oncho and LF endemic countries implementing integrated actions that include oncho elimination	% of oncho and LF endemic countries implementing integrated actions that include oncho elimination	Annual government public expenditure tracking	Government allocation to health nominally increasing over the period
	% NTD programme managers responsible for onchocerciasis (Baseline to be determined 2015)	% NTD programme managers responsible for onchocerciasis		
	% change in government health expenditure on NTDs per capita	% change in government health expenditure on NTDs per capita		
120 functional CDI projects established in all oncho endemic countries	Updated CDI manual	Updated CDI manual	Date of manual in use	Adequate financial and technical resources and inputs fully secured
	1:100 trained CDD to population ratio in 71 projects	1:100 trained CDD to population ratio in all remaining treatment areas	Annual reports and biennial rapid assessment	
	100% geographic coverage	100% geographic coverage	Annual rapid assessment	
	80% therapeutic coverage	80% therapeutic coverage	Annual rapid assessment	
Epidemiological and entomological surveillance undertaken	Annual epidemiological and entomological surveillance done for 71 projects	100% Annual epidemiological and entomological surveillance done for 31 projects	Annual reports from countries and APOC	All capacities built and training on elimination guidelines undertaken with projects properly implemented
	40 projects fully assessed	16 projects fully assessed	Breakpoint project validation report	
	12 countries exited	5 countries exited	Technical committee report	

Expected results	Verifiable indicator		Means of verification	Assumptions
	2020	2025		
Ceased all operations and closed safely		Closure committee established	Final programme, financial statement/ audit and legal status reports submitted to JAF in December 2025	All processes towards closure successfully executed without any liabilities outstanding
Resources mobilised and Programme efficiently managed	100% funding secured	100% funding secured	Annual financial and audit reports	Stable economic environment and partner commitment to elimination
	100% funds accounted for with value for money established	100% funds accounted for with value for money established		
OBJECTIVE: Collaborate with relevant programmes and partners to implement community-directed interventions to control/eliminate selected PCT-NTDs in all onchocerciasis endemic countries in Africa				
Advocated for and supported NTD mapping	LF and *Loa loa* in 20 APOC countries fully mapped and to date	NTDs in Africa fully mapped and to date	NTD Maps and report published	Collaboration between the various stakeholders
CDI strategy implemented in all participating countries for other PCT-NTD elimination	40 CDI projects transformed into Comm-HSS	31 CDI projects transformed into Comm-HSS	Mid and end-term evaluation reports	Cooperation between the various stakeholders secured
	30 health professionals trained at Masters level in Comm-HSS from 19 countries	16 health professionals trained at Masters level in Comm-HSS from 3 countries	Mid and end-term evaluation reports	
	Six laboratories capacities built	A centre of excellence and repository developed	Mid and end-term evaluation reports	ISO grade attained in 50% of laboratories
OBJECTIVE: Collaborate with relevant programmes and partners to strengthen community health systems in all onchocerciasis endemic countries in Africa				
Support HSS for PHC	Developed manuals and disseminated guidelines	BMCs trained and certified	Mid and end term evaluations	Resources acquired
HSS grants established	Call for proposals and programme initiated	A minimum of 20 Grants worth not more than US$ 2 million effectively concluded	Mid and end term evaluation	Countries have capacity to effectively implement innovations

ANNEX 1:
Disease-specific protocols for neglected tropical diseases*,†

Disease	Diagnostic approach for mapping	Threshold for implementation of PCT interventions	Unit of implementation	At-risk population targeted	Drugs	Frequency of intervention
Lymphatic Filariasis (in countries where oncho-cerciasis is co-endermic)	Antigen detection (ICT) or microfilaria detection (microscopy) in whole blood	Prevalence ≥ 1 % in adults in some part of an implementation unit	District or other as defined for ease of operation	≥ 5years old Specific LF programmes may target ≥ 2years old in non-co-endemic communities	IVM and ALB	Once per year (anticipated 4-6 years)
Onchocerciasis APOC	• Skin snip • Nodule detection using rapid techniques • DEC patch use anticipated	Presence of palpable nodules ≥ in adult men	Mesoendemic or hyperendemic focus (reflecting river basins)	≥ 5years old	IVM	• Once per year • Twice per year anticipated in new programmes and special circumstances
Schistosomiasis	Parasitological methods: 1) detect eggs in urine or stool (microscopy) 2) detecting blood in urine (Hemastix or questionnaires)	**High risk:** prevalence of infection ≥ 50% in SAC **Moderate-risk:** Prevalence of infection ≥ 10% but < 50% in SAC **Low-risk:** Prevalence of any STH ≥ 20% and < 50% in SAC	District , sub-district, or community	- SAC and adults - SAC and at-risk adults	PZQ	• Once per year • Once every two years • Twice during primary schoooling
Soil-transmitted helminthiasis (STH)	Detecting eggs in stool (microscopy)	**High risk:** Prevalence of any STH ≥ 50% in SAC **Low-risk:** Prevalence of any STH ≥ 20% and < 50% in SAC	District, sub-district, or community	SAC, preschool children, women of childbearing age, pregnant women in second and third trimesters, special adult populations	ALB or MBD	• Twice per year • Once per year
Trachoma (blinding)	Eyelid examination for follicular inflammation (TF)	TF prevalence ≥ 10% in 1-9 year old children	District	• Everyone ≥ 6 months old with azithromycin • Children <6 months with TET	AZT and TET	• Once per year (AZT) • Twice per day for 6weeks (TET)

* Consistent with established and currently followed World Health Organization recommndation; PCT = preventive chemotherapy; ICT = immuochromatography, IVM = ivermectin; ALB = albendazole; DEC = dicthlcabamzine; SAC= school age children; STH = soil-transmitted helminthes; PXQ = praziquantel; MBD = mebendazole; AZT = azithromycin; TET = tetracycline; TF = trachomatous inflammation; APOC = African Programme for Onchocerciasis Control; OEAP = Onchocerciasis Elimination Program in the Americas.

† Duration of intervention varies for each disease

ANNEX 2:
Planned interventions towards elimination of onchocerciasis 2016-2025

Continuing treatment | Post stoppage surveillance | Elimination confirmed

	Country and population		Duration		Ten year period starting 2016-2025									
SN	Project name	Population	Start	End	1	2	3	4	5	6	7	8	9	10
	ANGOLA													
1	Bengo	16,029	2010	2022										
2	Huila	867,092	2007	2017										
3	Kuando Kubango	126,781	2007	2019										
4	Lunda Norte	384,245	2006	2020										
5	Lunda Sul	231,091	2005	2017										
6	Moxico	254,268	2007	2019										
7	Uige	495,575	2012	2022										
8	Kwanza Norte	3,116	2012	2022										
	BENIN													
9	Benin	3,249,893	1997	2016										
	BURKINA FASO													
10	Burkina Faso	211,530	1994	2017										
	BURUNDI													
11	Bururi	352,728	2006	2016										
12	Cibitoke Bubanza	842,277	2005	2015										
13	Rutana	274,599	2006	2016										
	CAMEROON													
14	Adamaoua 1	470,290	2004	2018										
15	Adamaoua 2	427,330	1999	2015										
16	Centre 1	434,318	2001	2020										
17	Centre 2	102,229	2001	2020										
18	Centre 3	330,088	1999	2020										
19	Est	120,562	2005	2019										
20	Far North	285,148	2005	2015										
21	Littoral I	285,080	2006	2020										
22	Littoral II	152,081	2000	2020										
23	Northern Province	639,404	1999	2015										
24	Northwest	830,687	2004	2020										
25	South Province	303,594	2005	2020										
26	South West I	398,034	1999	2019										

Continuing treatment Post stoppage surveillance Elimination confirmed

	Country and population		Duration		Ten year period starting 2016-2025									
SN	Project name	Population	Start	End	1	2	3	4	5	6	7	8	9	10
27	South West II	270,883	2001	2019										
28	Western	1,664,277	2001	2019										
	CENTRAL AFRICAN REPUBLIC													
29	CAR	1,832,523	1999	2028										
	CHAD													
30	Chad	1,997,825	1998	2015										
	CONGO													
31	Congo Extension	5,938	2004	2015										
32	Congo 1	838,718	2001	2018										
	CÔTE D'IVOIRE													
33	Côte d'Ivoire	1,835,787		2018										
	DEMOCRATIC REPUBLIC OF CONGO													
34	Bandundu	1,406,032	2003	2018										
35	Bas - Congo	873,653	2004	2020										
36	Butembo-Beni	1,161,091	2008	2030										
37	Equateur-Kiri	1,174,844	2006	2030										
38	Ituri Nord	1,073,931	2008	2030										
39	Ituri Sud	1,135,000	2012	2030										
40	Kasai	10,073,103	2001	2028										
41	Kasongo	1,261,862	2007	2025										
42	Katanga Nord	586,255	2006	2025										
43	Katanga Sud	649,359	2006	2025										
44	Lualaba	210,631	2006	2025										
45	Lubutu	312,882	2008	2030										
46	Masisi Walikale	980,637	2008	2030										
47	Mongala	1,363,615	2006	2027										
48	Rutshuru-Ngoma	617,641	2006	2030										
49	Sankuru	999,225	2003	2030										
50	Tshopo	1,492,660	2003	2028										
51	Tshuapa	1,329,879	2006	2025										
52	Ubangi Nord	748,833	2006	2030										
53	Ubangi Sud	1,263,110	2006	2030										
54	Uélés	1,473,048	2002	2028										
	EQUATORIAL GUINEA													
55	Bioko TIDC	83,432	2000	2025										

Continuing treatment | Post stoppage surveillance | Elimination confirmed

	Country and population		Duration		Ten year period starting 2016-2025									
SN	Project name	Population	Start	End	1	2	3	4	5	6	7	8	9	10
	ETHIOPIA													
56	West Wollega	805,025	2004	2020										
57	Kelem Wollega	882,409	2012	2020										
58	Assossa Kemashi	58,342	2012	2020										
59	Bench Maji	710,113	2003	2015										
60	East Wollega	756,213	2004	2020										
61	Horoguduru Wollega	43,871	2012	2020										
62	West Shoa	309,516	2012	2020										
63	Gambella	103,896	2004	2015										
64	Illubabor	1,101,197	2004	2020										
65	Jimma	2,165,594	2004	2020										
66	Kafa-Shekka CDTI	1,233,117	2001	2015										
67	Metekel	156,942	2004	2015										
68	North Gondar	304,737	2004	2020										
	GABON													
69	Gabon	11,717	1999	2025										
	GHANA													
70	Ghana	2,294,913		2020										
	GUINEA													
71	Guinea	3,117,244	1996	2016										
	GUINEA BISSAU													
72	Guinea Bissau	180,797		2014										
	LIBERIA													
73	Southeastern	489,461	2006	2019										
74	Southwestern	705,572	2006	2019										
75	Lofa, Bong, Nimba	1,740,475	2000	2016										
	MALAWI													
76	Thyolo, Mwanza	899,168	1999	2015										
77	Malawi Extension	1,178,944	2000	2015										
	MALI													
78	Mali													
	NIGER													
79	Niger													

Continuing treatment Post stoppage surveillance Elimination confirmed

	Country and population		Duration		Ten year period starting 2016-2025									
SN	Project name	Population	Start	End	1	2	3	4	5	6	7	8	9	10
	NIGERIA													
80	Adamawa	1,714,764	2000	2016										
81	Akwa Ibom	29,358	2004	2016										
82	Bauchi	1,756,890	2001	2016										
83	Benue	3,464,915	2001	2018										
84	Borno	1,381,135	2000	2018										
85	Cross River	1,252,279	2000	2015										
86	Edo, Delta	1,609,999	1999	2016										
87	Ekiti	2,173,474	1999	2016										
88	Enugu, Anambra, Ebony	2,392,351	1999	2015										
89	FCT	507,886	1998	2016										
90	Gombe	1,909,032	1999	2016										
91	Imo, Abia	1,318,824	1999	2016										
92	Jigawa	357,517	1999	2016										
93	Kaduna													
94	Kano	991,209	1999	2016										
95	Kebbi	208,279	1999	2016										
96	Kogi	1,789,685	1998	2018										
97	Kwara	1,512,636	1999	2016										
98	Plateau Nassarawa	1,533,047	1998	2016										
99	Niger	2,659,049	1999	2016										
100	Ogun	344,493	2002	2016										
101	Ondo	1,370,293	1999	2016										
102	Osun	1,616,644	1998	2016										
103	Oyo	1,102,528	1999	2016										
104	Taraba	1,667,928	1998	2016										
105	Yobe	616,884	1999	2016										
106	Zamfara	286,292	1999	2013										
	SENEGAL													
107	Senegal													
	SIERRA LEONE													
108	Sierra Leone	3,047,253		2019										

Continuing treatment Post stoppage surveillance Elimination confirmed

	Country and population		Duration		Ten year period starting 2016-2025									
SN	Project name	Population	Start	End	1	2	3	4	5	6	7	8	9	10
	SOUTH SUDAN													
109	East Bahr El Gazal	550,325	2005	2023										
110	East Equatoria	978,183	2006	2024										
111	Upper Nile	512,573	2006	2023										
112	West Bahr El Gazal	2,966,286	2006	2023										
113	West Equatoria	699,670	2005	2027										
	SUDAN													
114	Northern Sector	403,516	1998	2015										
	TANZANIA													
115	Kilosa	514,408	2002	2015										
116	Mahenge	504,400	1998	2019										
117	Morogoro	361,040	2004	2015										
118	Ruvuma	398,574	1999	2018										
119	Tanga	312,693	2000	2014										
120	Tukuyu	114,432	2001	2015										
121	Tunduru	124,085	2005	2020										
	TOGO													
122	Togo	685,215		2016										
	UGANDA													
123	Phase I	385,731	1998	2016										
124	Phase II	750,508	1999	2016										
125	Phase III	1,384,313	1999	2016										
126	Phase IV	783,579	1999	2016										
127	Kitgum Pader	504,549	2012	2020										

AFRICAN PROGRAMME FOR
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World Health
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